BOEING

[redacted]

D6-27381

D6 6000 1532 ORIG. 8/73
B05-034

APPENDIX 1

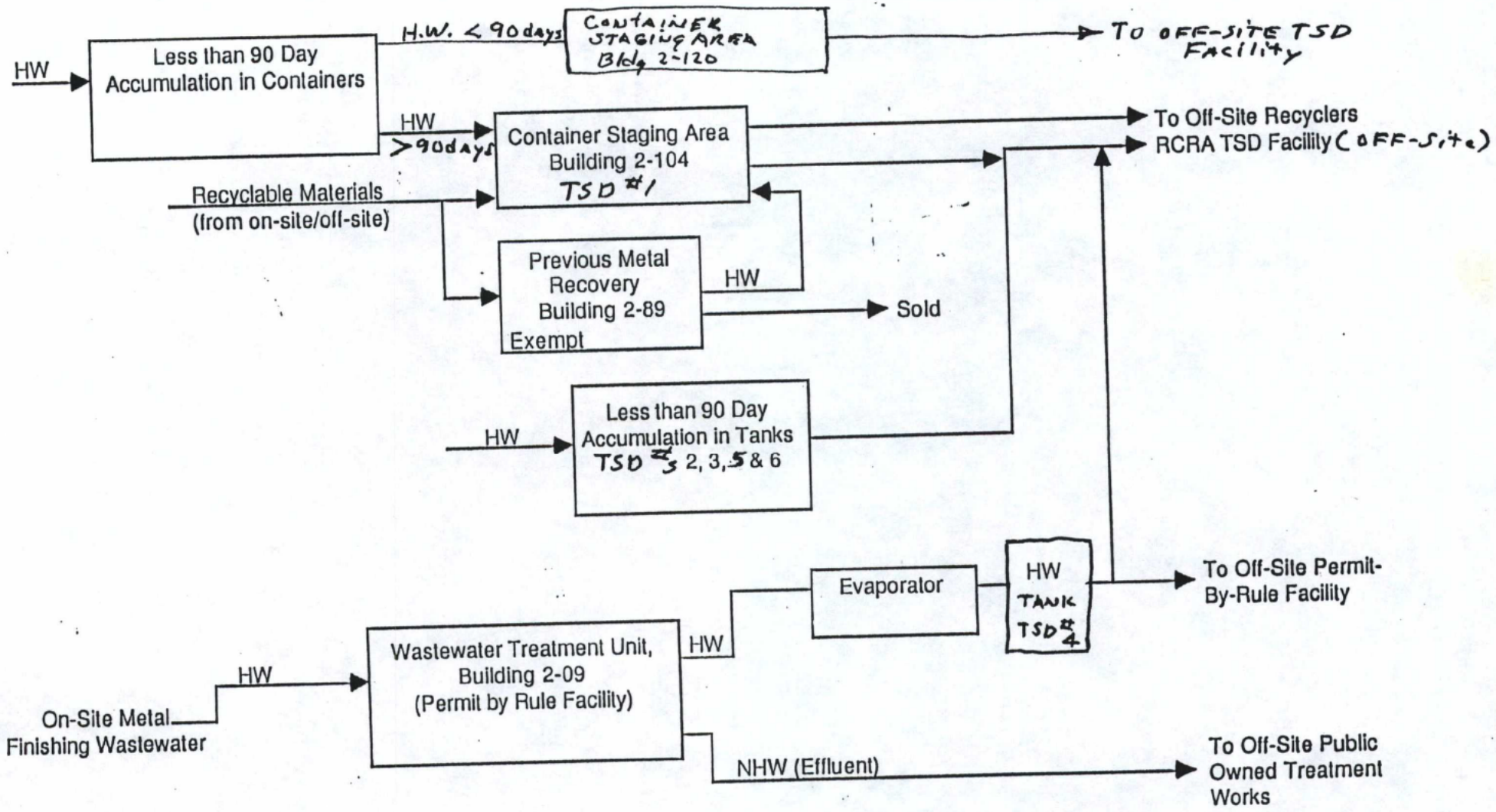
Appendix 1 consists of:

1. A chart of general facility information, hazardous waste management operations for Plant II.

2. A listing of Plant II Hazardous Waste Accumulation and Satellite Stations.

3. A reference document defining Plant II waste streams.

GENERAL FACILITY INFORMATION, HAZARDOUS WASTE MANAGEMENT OPERATIONS
BOEING AEROSPACE COMPANY, PLANT II
SEATTLE, WASHINGTON , SEPTEMBER 1987



64

PLANT II HAZARDOUS WASTE ACCUMULATION/SATELLITE STATIONS
1992

REG #	AREA LOCATION ACCUMULATION	SATELLITE	P-MONITOR	A-MONITOR	SUPERVISOR	SHOP
HWS-01	210-A17		Garry Ragsdale (b) (6)	Thomas Williams (b) (6)	C. Butler	A-6831
HWS-02	210-A33		Kevin Groff (b) (6)	Dan Peterson (b) (6)	D. Salangsang	4-7600
HWS-03		210-A37	Glenn Shoenmaker (b) (6)	A. Carter (b) (6)	S.K. Baker	9-3C11
HWS-04	210-B41		Don Lovejoy (b) (6)		P. Thompson	9-3C14
HWS-05		210-D45	Marion Henneke (b) (6)	Gary Walston	J. Williamson	A-3140
HWS-06	210-E35		James Rice (b) (6)	Neal Corsack (b) (6)	C. Fisher	A-3190
HWS-07	210-DR27 (outside)		Paul Sevruk (b) (6)	Aaron Gross (b) (6)	So Eng	A-3190
HWS-08	210-DR27 (shed)		Paul Sevruk (b) (6)	Aaron Gross (b) (6)	So Eng	A-3190
HWS-09	210-F45		Marion Henneke (b) (6)	David Damon	Jim Williamson	A-3140
HWS-10	215-K12		Arnie Handugan (b) (6)	James Newkirk (b) (6)	Tom Hazel	4-6220

HWS-11		231-WJ16	Ronald Brown (b) (6)	Jim Lee (b) (6)	Preston Thompson	9-3C14
HWS-12	231-WH7		Archie Wilson (b) (6)	Randy Monk (b) (6)	Jerry Romero	9-3208
HWS-13	231-DR5		(2) Cole Favre (b) (6)	(2) William Olson (b) (6)	Jerry Romero	9-3208
HWS-14	231-DR109		(3) David Walker (b) (6)	(3) Jame Hoover (b) (6)	Jerry Romero	9-2308
HWS-15	240-C11		Numan Payne (b) (6)	Mildred Bailey (b) (6)	Cal Patterson	9-4380
HWS-16	240-D9		Toni Johnson (b) (6)	Conni Johnson (b) (6)	D. Edgar	A-2320
HWS-17	240-N10		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-18	240-Q5		D.J. Mattson (b) (6)	Erick Mandy (b) (6)	Tim Tvedt	R-3318
HWS-19	240-Q8		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-20	240-Q10		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-21	241-A17		Harvey Suedenburg		Jim Peterson	A-2629

HWS-22	241-E20		Neal Corsack	Terrin Loney	Cliff Fisher	A-3190
HWS-23		241-F20	Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-23	241-I23		Dale Hart (b) (6)	Dave Johnson	Steve Scroggins	A-3160
HWS-25	241-J17		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-26	241-J25		Dale Hart (b) (6)	Rex Biegelow (b) (6)	Ed Alexander	A-3160
HWS-27	241-L14		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-28	241-L21		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-29	241-M13		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-30	241-M14		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-31	241-N17		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-32	241-O21		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-33	241-P15		Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205

HWS-34	241-P22	Dale Hart (b) (6)	Rex Bigelow (b) (6)	Ed Alexander	A-3160
HWS-35	241-Q14	Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-36	241-DR41	Cary Colbert (b) (6)	Debbie Spadoni	Cliff Fisher	A-3190
HWS-37	244-S6	Gary Hambrick (b) (6)	Chuck John (b) (6)	Jim Grall	A-2313
HWS-38	244-S9	Chuck John (b) (6)	Gary Hambrick (b) (6)	Jim Grall	A-2313
HWS-39	244-S10	Chuck John (b) (6)	Gary Hambrick (b) (6)	Jim Grall	A-2313
HWS-40	244-S25	Rick Sandvig (b) (6)	Ben Holland (b) (6)	Bruce Byers	9-3205
HWS-41	244-U6	Gary Hambrick (b) (6)	Chuck John (b) (6)	Jim Grall	A-2313
HWS-42	244-U9	Gary Hambrick (b) (6)	Chuck John (b) (6)	Jim Grall	A-2313
HWS-43	244-V24	Dale Hart (b) (6)	Doran Pederson	Ed Alexander	A-3160
HWS-44	249-VB20	Brian Mason (b) (6)	Roger Donaldson (b) (6)	Ray Beatty	A-3750

HWS-45	249-VC23		Roger Donaldson (b) (6)	Bill Sandoval (b) (6)	Ray Beatty	A-3750
HWS-46	259-Storage Area		Hans Jorgensen	Terry Martin	Mel Morris	9-3203
HWS--47		263-B13	Scott Anacker (b) (6)	Noel Brnadon (b) (6)	Ray Starwalt	A-2332
HWS-48	262-C1		Bob Pedersen (b) (6)	Joni Spencer (b) (6)	Mel Morris	9-3206
HWS-49	262-PB5		Gary Heinz (b) (6)	Terry Martin (b) (6)	R.M. Morris	9-3203
HWS-50	262-DR4		Gary Hoff (b) (6)	Mel Morris	Mel Morris	9-3203
HWS-51		263-B13	Scott Anacker (b) (6)	Noel Brandon (b) (6)	Ray Starwalt	A-2332
HWS-52	263-C11		Tim Davidson (b) (6)	John Hullett (b) (6)	Ray Starwalt	A-2330
HWS-53	263-J8		James Barbarus (b) (6)	James Jowell (b) (6)	LaFrank Newell	A-2330
HWS-54	263-K4		James Barbarus (b) (6)	James Jowell (b) (6)	LaFrank Newell	A-2330
HWS-55	263-DR2		Mildred Bailey (b) (6)	Ben Lago (b) (6)	Cal Patterson	9-4380
HWS-56	265-D10		Larry Spence (b) (6)	Dennis Bardsley (b) (6)	Ed Burns	S-6224

HWS-57		265-D20	Scott Sanders (b) (6)	Stephen Christ (b) (6)	Ken Bushy	A-6116
HWS-58		265-G16	Scott Sanders (b) (6)	Stephen Christ (b) (6)	Ken Bushy	A-6116
HWS-59	265-DR7		Larry Spence (b) (6)	Dennis Bardsley (b) (6)	Ed Burns	A-6116
HWS-60		266-B10	Margo LaBolle (b) (6)	Richard Kuramoto (b) (6)	J. Damery	9-3203
HWS-61		266-D6	SAME AS 266-B10			
HWS-62		266-D8	SAME AS 266-B10			
HWS-63		266-H15	SAME AS 266-B10			
HWS-64		266-J3	SAME AS 266-B10			
HWS-65	280-DH30		Wayne Cook (b) (6)	David Mathison (b) (6)	Dorothy Tucker	4-7626
HWS-66	280-DRW-1A		Gary Kizziah (b) (6)		Gerry Croy	4-7000
HWS-67	283-AA6		Robert Nesbit (b) (6)	Doug Voss (b) (6)	Ray Starwalt	A-2330
HWS-68	283-C6		Keith White (b) (6)	Al Richardson (b) (6)	Ray Starwalt Douglas Lutterman	A-2330

HWS-69	283-E6	Robert Nesbit (b) (6)	Doug Voss (b) (6)	Ray Starwalt	A-2330
HWS-70	283-E17	Robert Nesbit (b) (6)	Donald Lemmon (b) (6)	Ray Starwalt	A-2330
HWS-71	283-H13	Keith White (b) (6)	Al Richardson (b) (6)	Ray Starwalt Douglas Lutterman	A-2330
HWS-72	286-D12	Tim Mattingley (b) (6)	Art Schilling (b) (6)	Curt Renhard	A-3750
HWS-73	286-E1	SAME AS 286-B12	SAME AS 286-B12	J. Wagner	A-3750
HWS-74	286-RH4	SAME AS 286-B12	SAME AS 286-B12	J. Wagner	A-3750
HWS-75	286-DR9	SAME AS 286-B12	SAME AS 286-B12	Curt Renhard	A-3750
HWS-76	287-G7.5	Robert Nesbitt (b) (6)	Roy Armstrong (b) (6)	Ray Starwalt Richard Minard	A-2330
HWS-77	2106-South	Dean Warns (b) (6)	Eric=k Wivag (b) (6)	Dan Locke	9-3740
HWS-78	2108-N2	Thomas Rolkseth (b) (6)	Timothy Lewis (b) (6)	Dennis Ryan	4-7600
HWS-79	2117-DR3	Steve Austin (b) (6)	Chuck Lee (b) (6)	Steve Austin (MORTENSON CONTRACTOR)	

Reference Do

APPENDIX I.

Plant 2 Waste Streams and List of Figures

Waste Streams and Figure Number	Title
A. Chrome Contaminated Waste Water	
A2	Chrome Contaminated Waste Water
A2-09	2-09 Chrome Contaminated Water Generation Process
A2-10	Chrome Contaminated Water from the 2-10 Building
A2-41	Chrome Contaminated Water Generated in the 2-41 Building
A2-62	Chrome Waste Water from 2-62 Building (Current Process)
A2-62P	Chrome Waste Water from 2-62 Building (Proposed Process)
B. Mixed Acids	
B2	Ultimate Disposition of Mixed Acid Waste Generated at Plant II
SB2-31	Mixed Acids Stored in 2-31 Building's Acid Hold Tank
B2-10/A-3199	Mixed Acid Generated at Aluminum Chem Mill Area (Org. #A-3199), 2-10 Building Transferred to 2-31 Building
B2-10/A-3196	Mixed Acids from Anodic Line Organization #A-3196
B2-41/A-3192	Mixed Acid Generated in the 2-41 Building Consolidated in the 2-31 Acid Ho. Tank
C. Solvent/Paint	
C2	Disposal of Solvent/Paint Waste at Plant II During 1987
C2-10	Generation of Solvent/Paint in 2-10 Building
C2-40	Generation of Waste Solvent/Paint and Cans in the 2-40 Building A-3190 Paint Supply Shop
C2-41	Generation of Solvent/Paint in 2-41 Building
C2-62	Generation of Solvent/Paint in 2-62 Building
D. Aluminum Chem Mill	
D2-10A	Aluminum Chem Mill Waste Generation Description ✓
D2-10B	Aluminum Chem Mill Tank Configuration
E. Waste Coolant	
E2A	"Trimsol" Coolant Recovery
E2B	"Cool lube 220" and "Five Star" Coolant Waste Generation Process

Waste Streams and Figure Number	Title
F. Cans	
F2	Ultimate Disposition of Waste Cans
F2-40	Generation of Waste Solvent/Paint and Cans in the A3190 Paint Shop
F2-86	Accumulation of Waste Cans at the 2-86 Building
G. Empty Drums	
G2	Empty Drums
H. Paint Booth Sludge	
H2	Paint Booth Sludge Generation and Disposal
I. Oily Waste Water	
I2	Oily Waste Water
J. Solvent Contaminated Rags	
J2	Solvent Contaminated Rag Generation and Disposal
J2-86	Accumulation of Used Rags at 2-86 Building
K. Cyanide	
K2	Generation and Disposal of Cyanide Wastes
L. Absorbent	
L2	Generation and Disposal of Used Absorbent
M. Paint Screens	
M2	Generation of Paint Screen Waste
N. Alkaline	
N2	Alkaline Waste Generation and Disposal Process
P. Grinding Sludge	
Q. Skydrol	
Q2	Accumulation of Skydrol Wastes
R. Lab Packs	
R2	Lab Packs

Waste Streams and Figure Number	Title
S. Oil Filters	
S2	Generation and Disposal of Oil Filters
T. Fixer	
T2	Generation and Disposal of Fixer

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM A2

WASTE PROFILE SHEET

Waste Name: Chrome Contaminated Water

Adjusted Disposal Cost:

Code		Amount
A1	Tacoma	23,750 gallons
A2	Tacoma	412,750 gallons
TR	18-62 Bldg.	199,150 gallons
	Total	635,650

Annual Generation Rate to Offsite TSDF: 436,500 gallons

Generators Source: **Buildings** 2-09, 2-10, 2-31, 2-41, 2-62

Is it combined with other wastes?: Yes

Which Wastes?: See Figure A2

Waste Physical State: Liquid

Waste Generation Process Description: See Figure A2

Transporter: Resource Recovery

Packaging Method: All Bulk

T.S.D.F. Destination: Tacoma

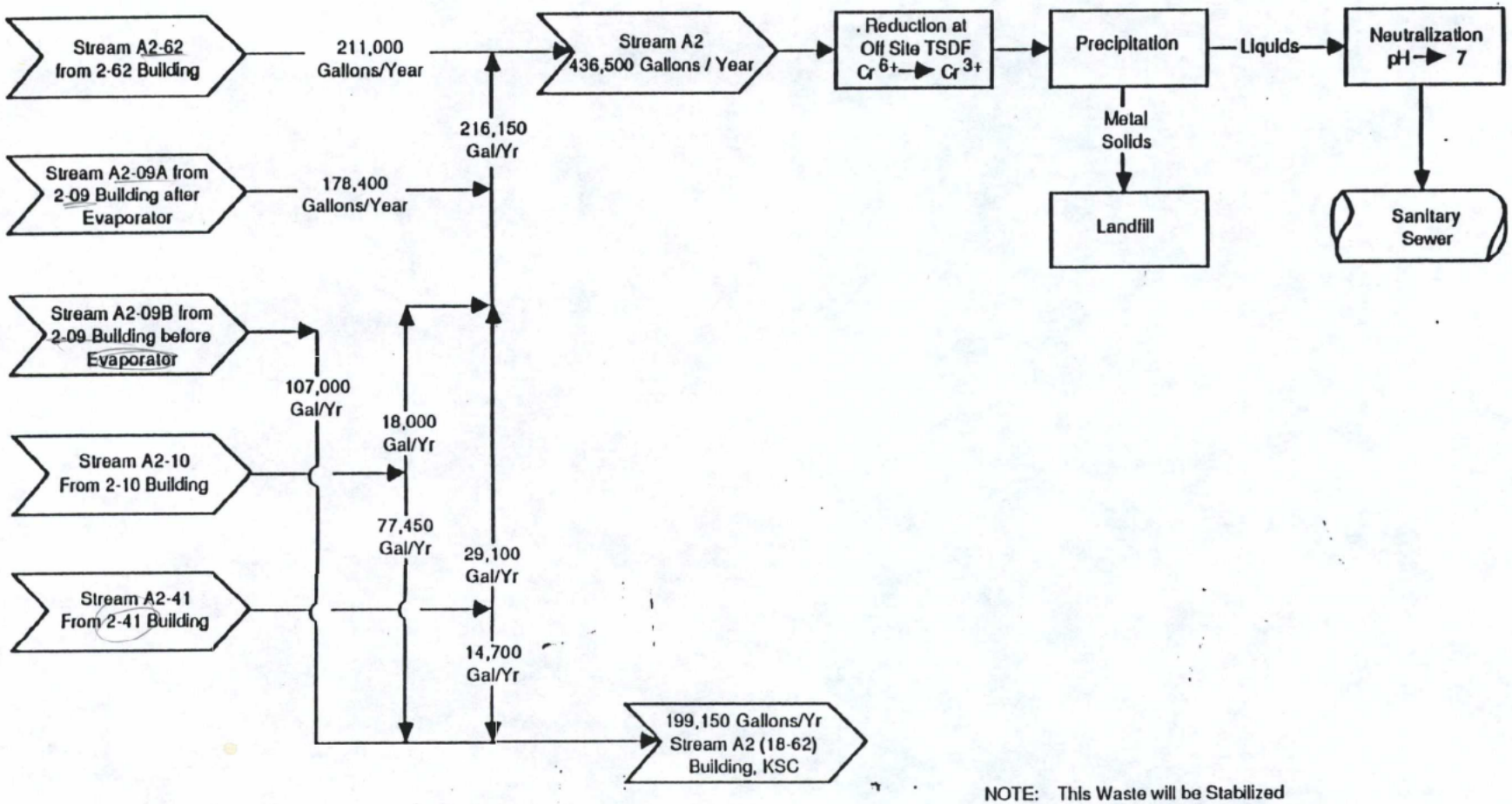
E.P.A. Hazardous Waste Code: D002, D007

Ultimate Disposition: Reduction, Precipitation, Sedimentation; Solids to Hazardous Waste Landfill; Liquids → Neutralized → Sanitary Sewer. See Figure A2.

NOTES:

FIGURE A2

CHROME CONTAMINATED WASTE WATER FROM PLANT II

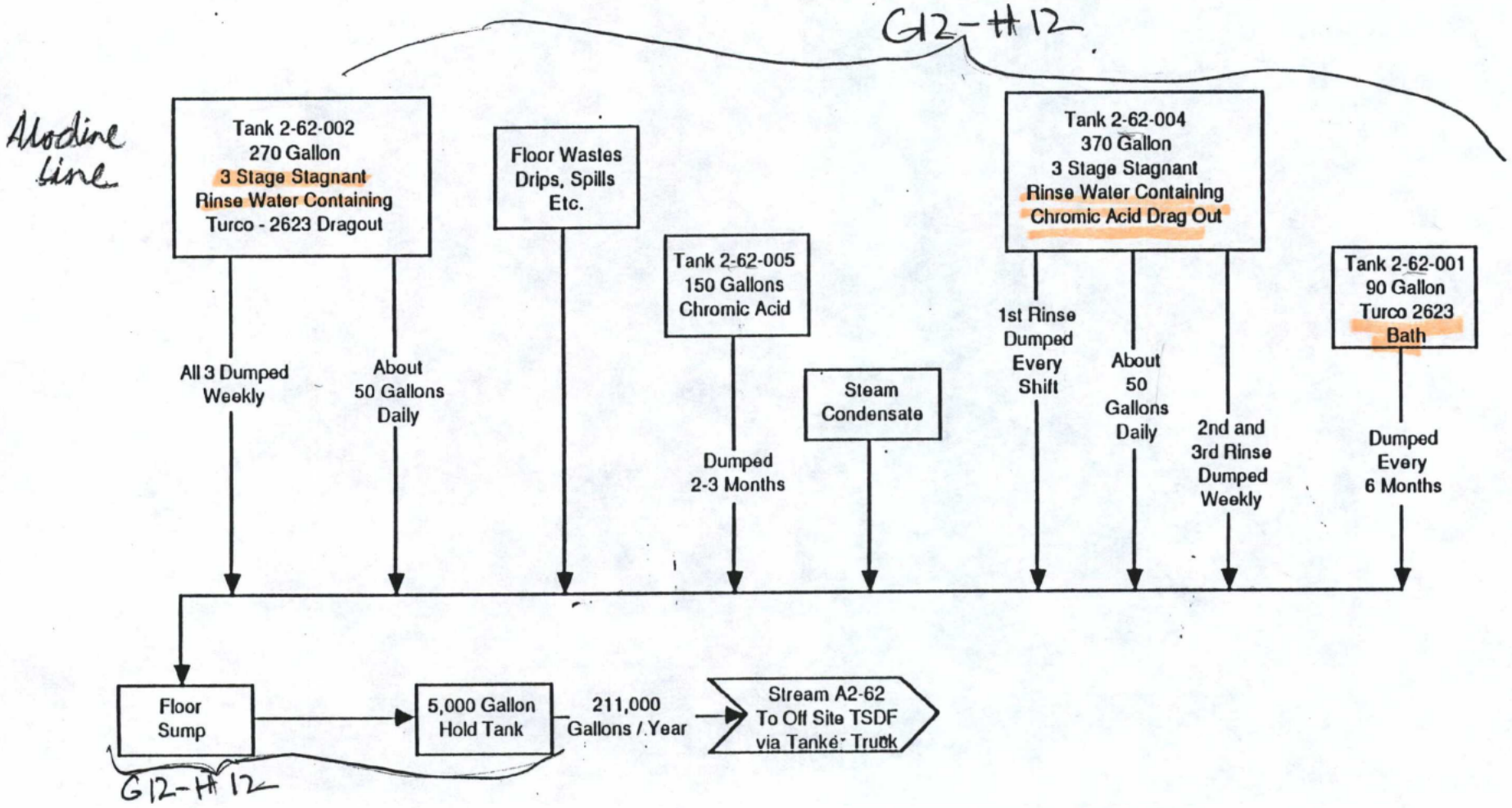


NOTE: This Waste will be Stabilized prior to Landfill after 1988.

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
PL7MO

FIGURE A2-62

CHROME WASTE WATER FROM 2-62 BUILDING (CURRENT PROCESS)



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
PL2MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM A2-09

WASTE PROFILE SHEET

Waste Name: Chrome Contaminated Water
(DI Regenerant)

Annual Generation Rate to Offsite TSDF: 178,400 gallons

Generators Source: Building 2-09

Organization Number: 2-4344 **Contact name:** Don Marschall

Phone Number: 655-0516

Is it combined with other wastes?: No

Waste Physical State: Liquid

Waste Chemical Makeup

For waste sent to the 18-62 Bldg.: 1.5 < pH < 3.5; 70 ppm < chrome < 1200 ppm; occasionally Nickel ≈ 100 ppm, Cadmium ≈ 100 ppm & Copper ≈ 20 ppm

For waste sent to offsite TSDF: 0.5 < pH < 2.6; 600 ppm < Chrome < 7,800 ppm

Process Tank (Where Dragout Originates)	Volume (Gallons)	Manufacture Name	Product Name	Significant Components	Specification Number
3	21,000	Amchem	Deoxidizer No. 6	20% Chromic Acid	BAC 5765
5A	23,000	Occidental Chemical Corp.	Chromic Acid	4.3%	BAC 5019
5B	1,440	Cascade Chemical	Sulfuric Acid	10%	BAC 5022
6	21,000	Amchem	Alodine 1200	30% Chromic Acid 20% Potassium Ferricyanide	BAC 5719

Waste Generation Process Description: In the 2-10 Building's Alodine line, organization #A-3196, parts are rinsed in Tank 4 after being dipped in Tanks 3, 5A and 5B and in 7B after being dipped in Tank 6. The rinse water is run through D.I. units in a closed loop circuit and the regenerant is stored in a 3,000 gallon hold tank awaiting evaporation and 80% volume reduction. If the evaporator is not working, this waste will be trucked to the 18-62 Building for treatment. See Figure A2-09.

Transporter: Resource Recovery **Packaging Method:** Bulk

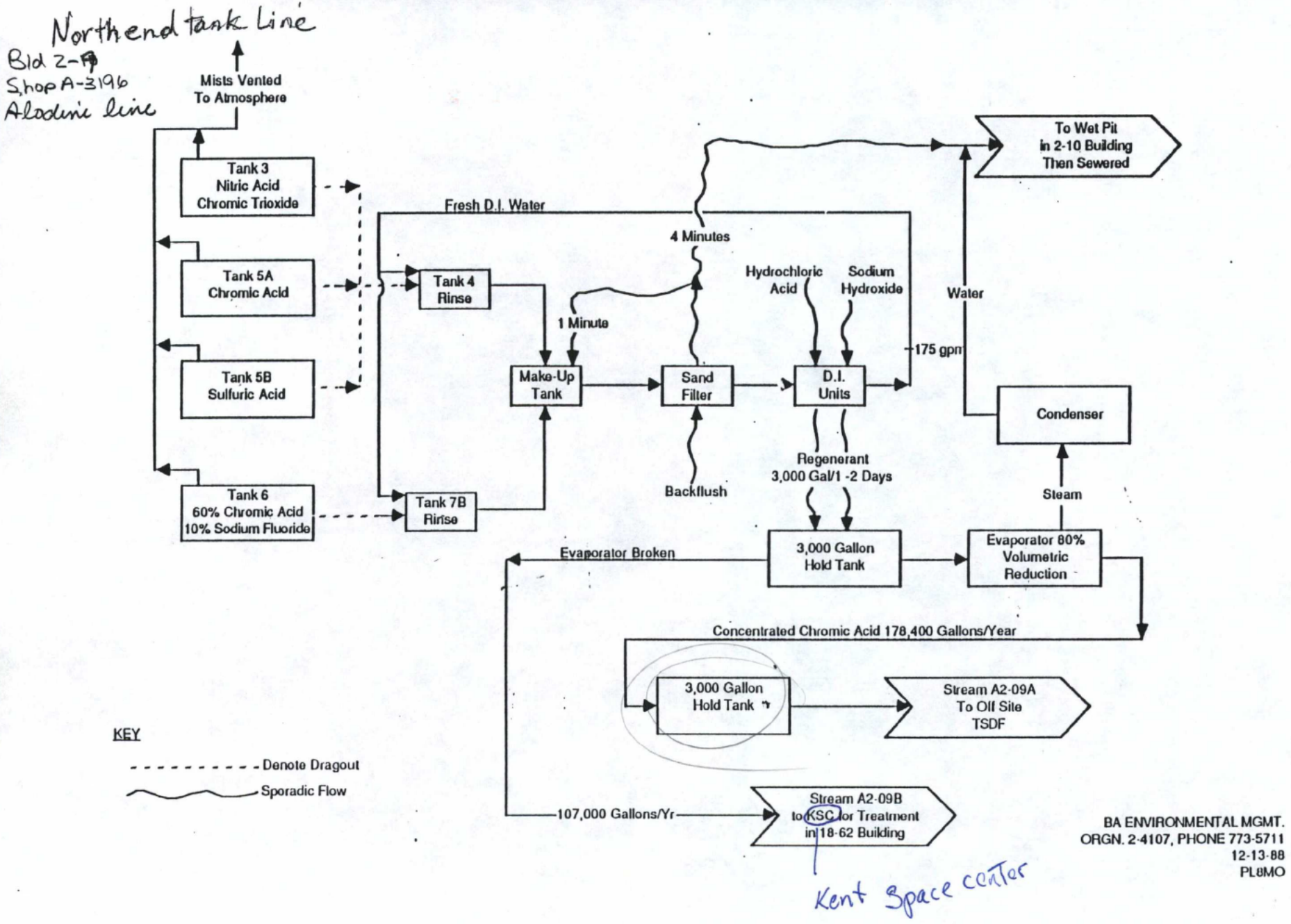
Code	Amount (Gallons)
A1	10,000 gallons
A2	168,400 gallons
TR	107,000 gallons
Total	375,400 gallons

E.P.A. Hazardous Waste Code: D002, D007

Ultimate Disposition: In-house or offsite TSDF: Reduction, Precipitation, Sedimentation → Liquids → Neutralized → Sanitary Sewer; Solids to hazardous waste landfill.

FIGURE A2-09

2-09 CHROME CONTAMINATED WATER GENERATION PROCESS



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
PL8MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM A2-10

WASTE PROFILE SHEET

Waste Name: Chrome Contaminated Water

Annual Generation Rate: 18,000 gallons
(Trucked to Offsite TSDF)

Generators Source: Building 2-10

Organization Number: A-3196 & A-3197

Contact name: Primo Baccetti

Phone Number: 655-1894

M/S: 22-09

Is it combined with other wastes?: Yes

Which Wastes?: Tanks 14, 15 & 17 in the A-3197 Paint Strip Area and Tanks 5A, 7A, & 8A in the A-3146 Alodine line.

Waste Physical State: Liquid

Waste Chemical Makeup: 300 ppm < chrome < 50,000 ppm; 1 < pH < 3.5

Org. No.	Process Tank	Volume (Gallons)	Manufacture Name	Product Name	Significant Components	Specification Name
A-3197	~~17~~	1,045	Pennwalt Corp.	Stripper Fosrinse		BAC 5725
A-3197	14	2,000	N/A	N/A	Dragout	N/A
A-3197	15	2,000	N/A	N/A	Dragout	N/A
A-3196	5A	23,000	Occidental Chemical Co.	Chromic Acid	4.3%	BAC 5019
A-3196	7A	14,000	Amchem	Alodine 1000	1% Chromic Acid	BAC 5719
A-3196	8A	17,500			13.5 lbs. Chromic Acid 10.5 lbs. Sodium Chromate	BAC 5019

Reason for Use: A-3196 Alodine Area: Provides protective coating
A-3197 Paint Strip Area: To remove paint from parts that don't make the specification requirements.

Waste Generation Process Description: See Figure A2-09.

Transporter: Resource Recovery

Packaging Method: Bulk

T.S.D.F. Destination: Tacoma

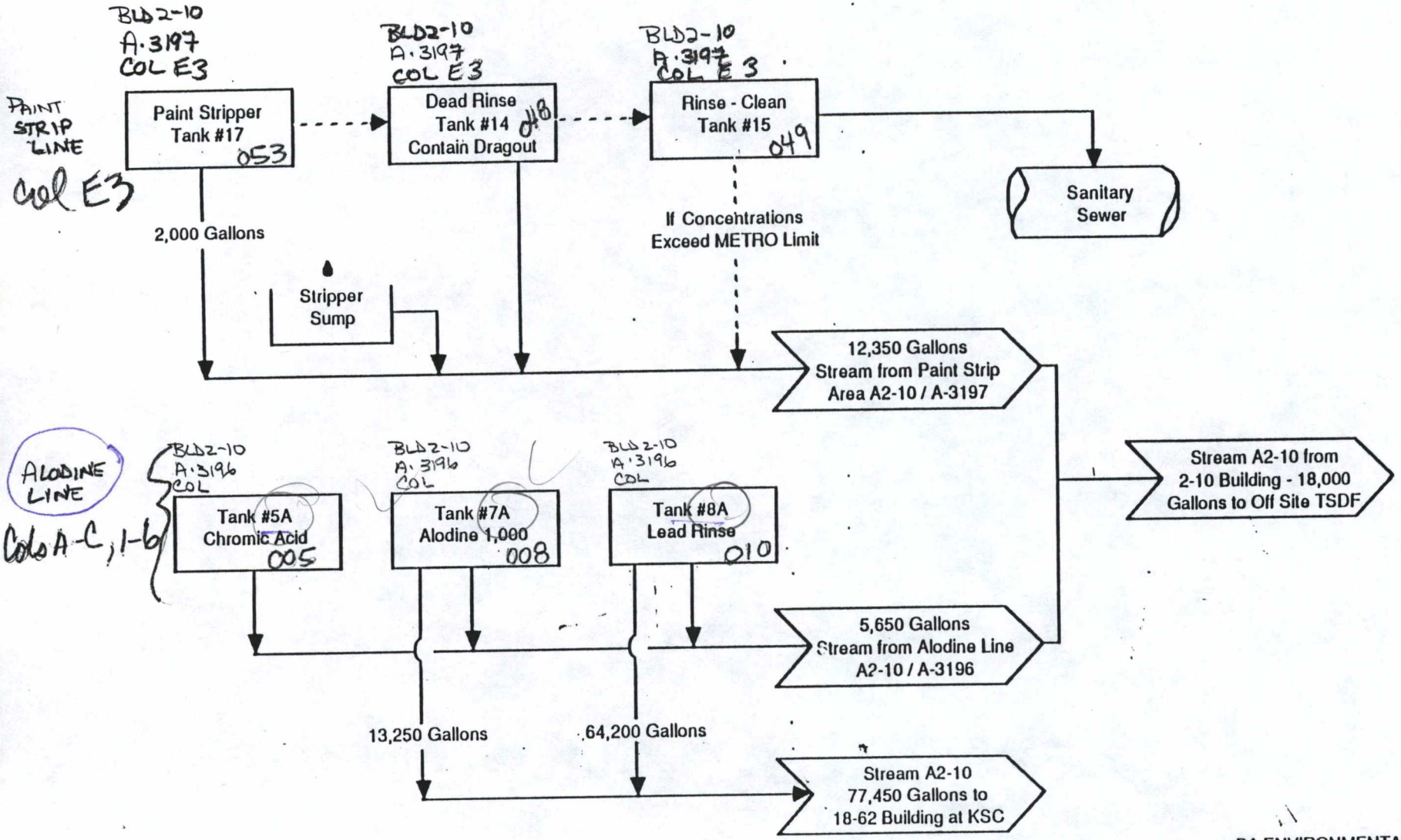
Code	Amount (Gallons)
A1	4,150 gallons
A2	13,850 gallons
TR	77,450 gallons
Total	95,450 gallons

E.P.A. Hazardous Waste Code: D002, D007

NOTES:

NOTES:

FIGURE A2-10
CHROME CONTAMINATED WATER FROM THE 2-10 BUILDING



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
PL9MO

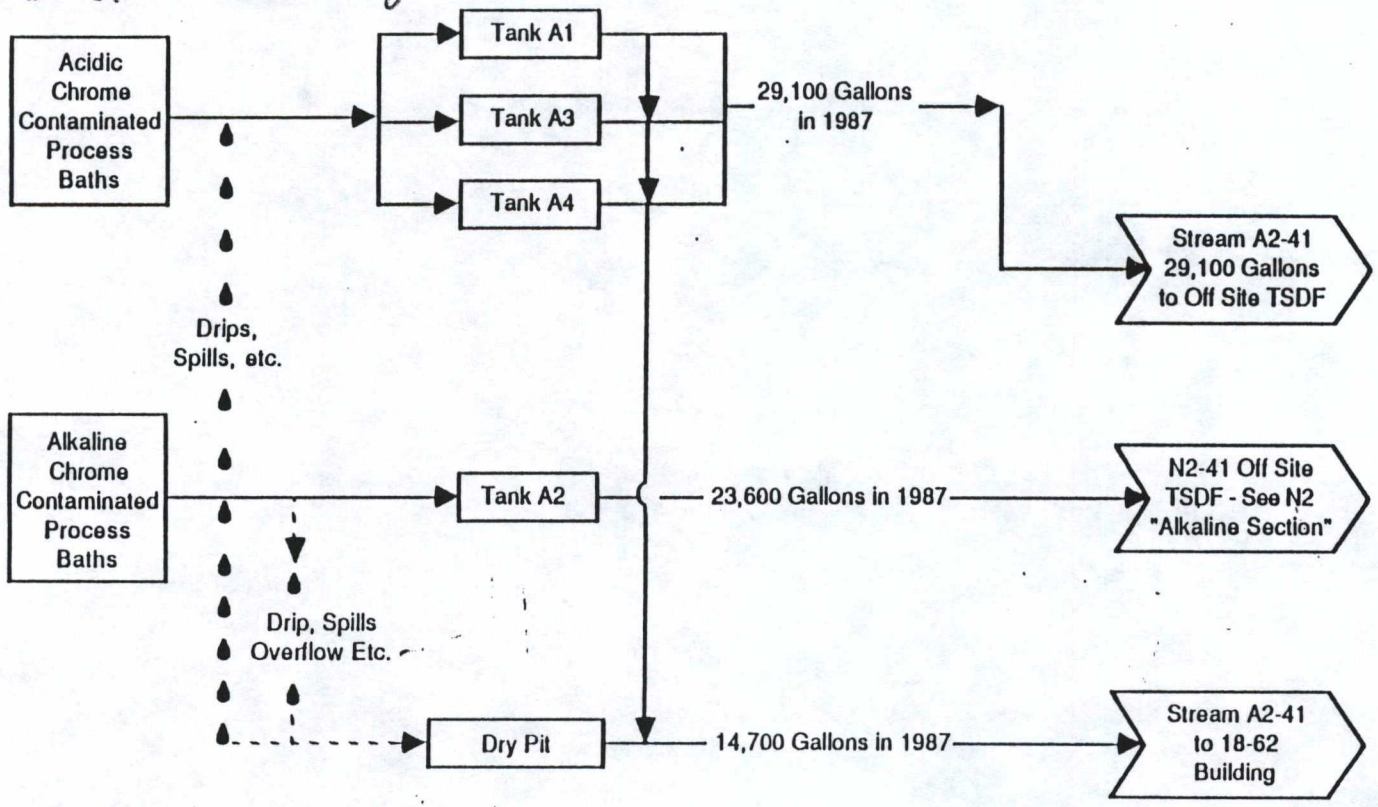
FIGURE A2-41

CHROME CONTAMINATED WATER GENERATED IN THE 2-41 BUILDING

No longer a production line; for MR&D use only

BLD 2-41
A-3192
COL A-22

PLATING LINE



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
A2-41MO

WASTE STREAM A2

CHROME CONTAMINATED WATER WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

30% (TR): $Cr^{6+} \rightarrow Cr^{3+}$, Neutralization
(VR): Precipitation, Sedimentation;
Liquid → Sanitary Sewer

70% (TR): $Cr^{6+} \rightarrow Cr^{3+}$, Neutralization
(VR): Precipitation, Sedimentation; Liquid → Sanitary Sewer

(U) Landfill Solids

CHANGES IMPLEMENTED

(S) Landfill Solids 8/88

OPTIONS

1: Segregating concentrated acids and nonconcentrated acids.

2: Replumb the 2-62 Building to sewer Turco contaminated rinse water and steam condensation and run chrome contaminated water th rough a Deionization Unit (Proposed for 1989).

3: Chromic Acid Reclamation.

4: Reduction, Precipitation, Sedimentation; Liquids → Neutralized → Sanitary Sewer
→ Metal reclaimed from settled solids.

or → (S) Settled Solids

5: Chromic Acid Reclamation.

6: Send waste from 2-62 Building to 2-09 Building for volume reduction by evaporation. (Suggested 9/1/87)

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

STREAM A2-41

WASTE PROFILE SHEET

Waste Name: Chrome Contaminated Water

Annual Generation Rate to Offsite T.S.D.F: 29,100 gallons

Generators Source: **Building** 2-41 Plating Shop

Organization Number: A-3192 (Shop) **Contact name:** Don Marschall (2-4344)

Phone Number: 655-0516 **M/S:** 19-14

Is it combined with other wastes?: Yes

Which Wastes?: Almost all acidic chrome contaminated baths in the 2-41 Bldg.

Waste Physical State: Liquid

Waste Chemical Makeup: 50 ppm < chrome < 1200 ppm; 1.8 < pH < 10. Occasionally: 50 ppm Cadmium, 16 ppm Lead, 56 ppm Nickel, 23 ppm Zinc, 18 ppm Copper

Waste Generation Process Description: Small draws from the 2-41 process baths are consolidated in tanks A1, A3 and A4 before being shipped to an offsite T.S.D.F.

Reason for Disposal: Authorized by Chem Lab.

Transporter: Resource Recovery **Packaging Method:** Bulk

Code	Amount (Gallons)
A2	29,100 gallons
TR	14,700 gallons
Total	43,800 gallons

E.P.A. Hazardous Waste Code: D002, D006, D007, D008

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

STREAM A2-62

WASTE PROFILE SHEET

Waste Name: Chrome Contaminated Water

Annual Generation Rate: 211,000 gallons

Generators Source: Building 2-62

Organization Number: 2-2143 **Contact name:** John Naig

Phone Number: 655-5131

Is it combined with other wastes?: Yes

Which Wastes?: Turco 2623 & Rinse Water, Alodine 600 & Rinse Water, Steam Condensate

Waste Physical State: Liquid

Waste Chemical Makeup: 95 ppm < chrome < 8,000 ppm (Typically ≈ 300 ppm) 0.7 < pH < 6.5 (Typically ≈ 2)

Raw Material Manufacturer	Product Name	Significant Components	Specification
Clorox	Turco 2623	30% Sodium Meta Sulfide 7% Sodium Phosphate, tribase	BAC #5749
Amchem	Alodine 600	40% Chromic Acid 50% Sodium Fluoborate	BAC #5226/5719

Reason for Use: Metal pretreatment for painting

Waste Generation Process Description: After tank 2-62-005 (Chromic Acid) the parts are rinsed in tank 2-62-004 which contains chrome contamination due to dragout. This water is consolidated in a 5,000 gallon hold tank and contributes > 75% to the tanks volume. Steam condensate and rinse water containing Turco 2623 dragout (which may be sewered) are combined with floor wastes and biannual dumps from tank 2-62-001 & quarterly dumps from tank 2-62-005 in the same 5000 gallon hold tank. See Figure A2-62.

Transporter: Resource Recovery

Packaging Method: Bulk

NOTES:

Results:

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM B2

WASTE PROFILE SHEET

Waste Name: Mixed Acid

Annual Generation Rate (to Offsite TSDF): 291,700 gallons

Generators Source: **Building** 2-10, 2-31, 2-41, 2-108

Waste Physical State: Liquid

Waste Chemical Makeup: Hydrocloric Acid, Sulfuric Acid, Nitric Acid, Hydroflouric Acid. Aluminum, etc.

Code	Amount
A1	110,900 gallons
A2	180,800 gallons
TR	4,200 gallons
Total	296,000

Waste Generation Process Description: See Figure B2.

Transporter: R.R. **Packaging Method:** Primarily Bulk

T.S.D.F. Destination: Bulk to Tacoma; Drums to Georgetown

E.P.A. Hazardous Waste Code: D002, D007, occasionally D004, D008 or D010

Ultimate Disposition: Dilution, Reduction, Precipitation Sedimentation: Solids to Hazardous Waste Landfill; Liquids → Neutralized → Sanitary Sewer. See Figure B2.

WASTE STREAM B2

MIXED ACID WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

(TR): $Cr^{6+} \rightarrow Cr^{3+}$, Neutralization
(VR): Precipitation, Sedimentation; Liquid → Sanitary Sewer
(U) Landfill Solids

CHANGES IMPLEMENTED

(S) Landfill Solids

OPTIONS

1: Segregating concentrated acid from nonconcentrated acid reduces volume and cost.

2: Installing automatic timers would reduce residence times and prolong bath life. (Particularly in tank 3 of the Alodine Line).

3: Prolong bath life by developing and implementing an aluminum removal system in tank 3 of the Alodine Line.

4: Small quantities of nonconcentrated acid should be consolidated in the 2-31 Building's acid hold tank instead of being shipped out in and contaminating drums.

5: In the Aluminum Chem Mill area, installing a D.I. unit on tanks 2 and 6 would decrease the amount of waste generated from tanks 3 & 7. (Proposed for 1989.)

6: Chromic Acid reclamation.

7: Reduction, Precipitation, Sedimentation; Liquids → Neutralized → Sanitary Sewer
→ Metals reclaimed from settled solids
or → (S) Settled Solids

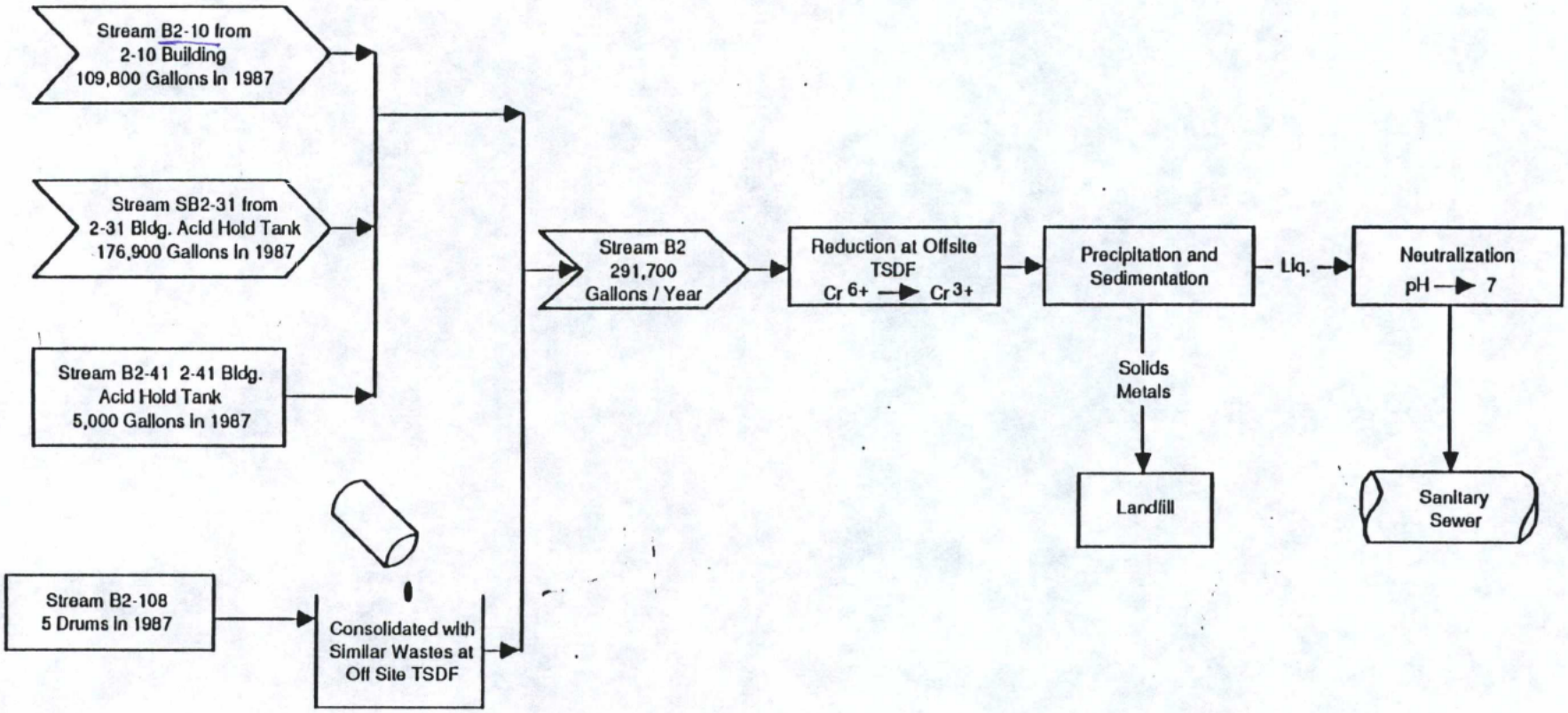
8: Chromic Acid Reclamation

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

FIGURE B2

ULTIMATE DISPOSITION OF MIXED ACID WASTE GENERATED AT PLANT II

Chemical milling & coating of aluminum parts



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
B2MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM SB2-31

WASTE PROFILE SHEET

Waste Name: Mixed Acid

Generators Source:	**Building**	Organization Number(s)
	2-10	A-3196, A-3197, A-3199
	2-62	2-2143
	2-41	A-3192
	2-31	2-2306

Is it combined with other wastes?: Yes

Waste Physical State: Liquid

Waste Chemical Makeup: 0.5 < pH < 1.8; 1.0 oz./gal. < Hydroflouric Acid < 1.2 oz./gal., Hydrochloric Acid; 5 oz./gal. < Nitric Acid < 15 oz./gal., Sulfuric Acid, Chrome ≈ 1 oz./gal.

Waste Generation Process Description: Various process bath dumps and drains are combined in this acid hold tank. See Fig. SB2-31, Fig. B2-10/A-3199, Fig. B2-41/A-3192 and Fig. B2-10/A-3196.

Billing Code		Amount
A1	Tacoma	39,200 gallons
A2	Tacoma	137,700 gallons
	Total	176,900

Transporter: R.R. **Packaging Method:** Bulk

T.S.D.F. Destination: Tacoma

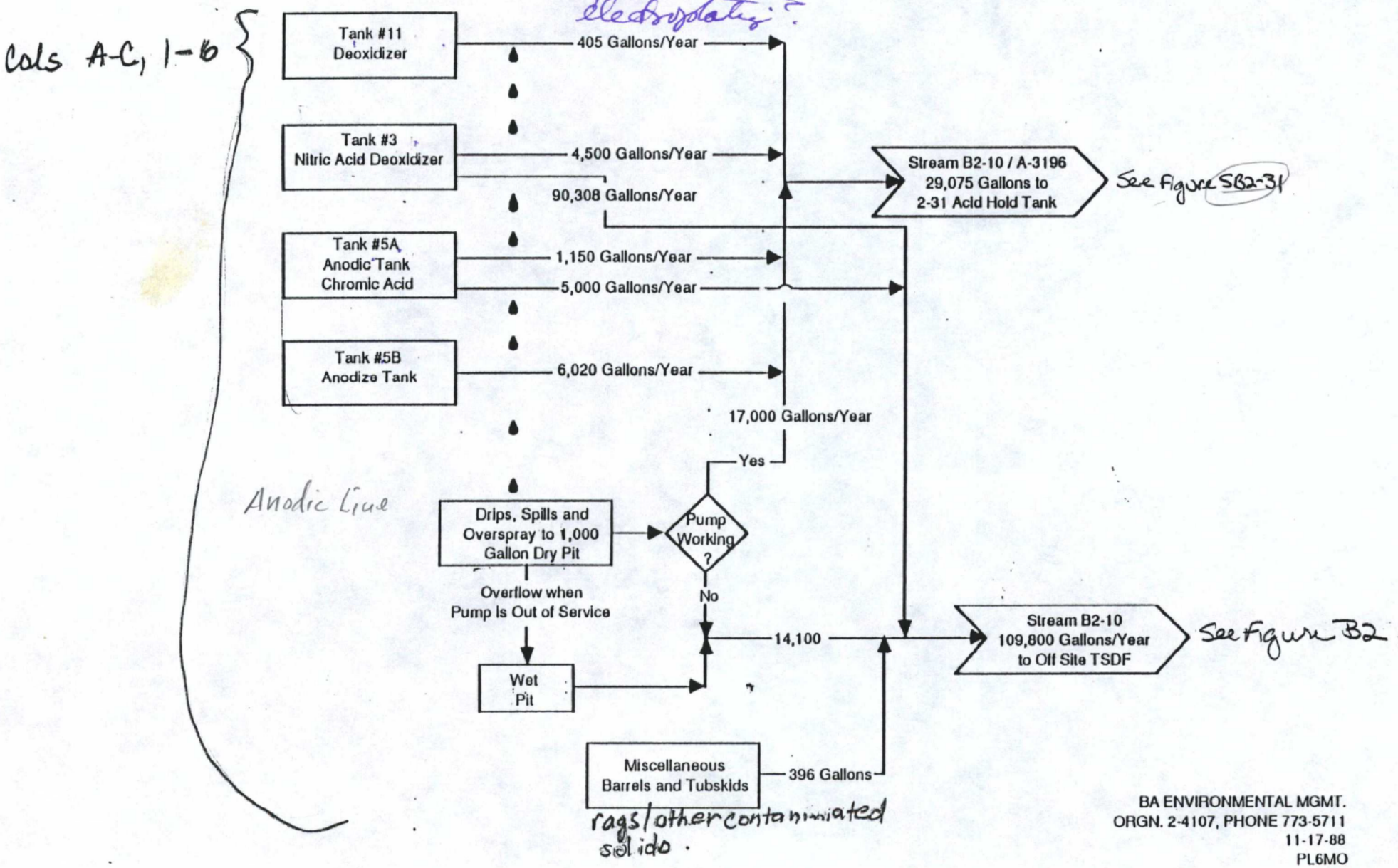
E.P.A. Hazardous Waste Code: D002, D007, WT02

Ultimate Disposition: Reduction, Precipitation, Sedimentation: Solids → Hazardous Waste Landfill; Liquids → Neutralized → Sanitary Sewer. See Fig. B2.

NOTES:

FIGURE B2-10 / A-3196

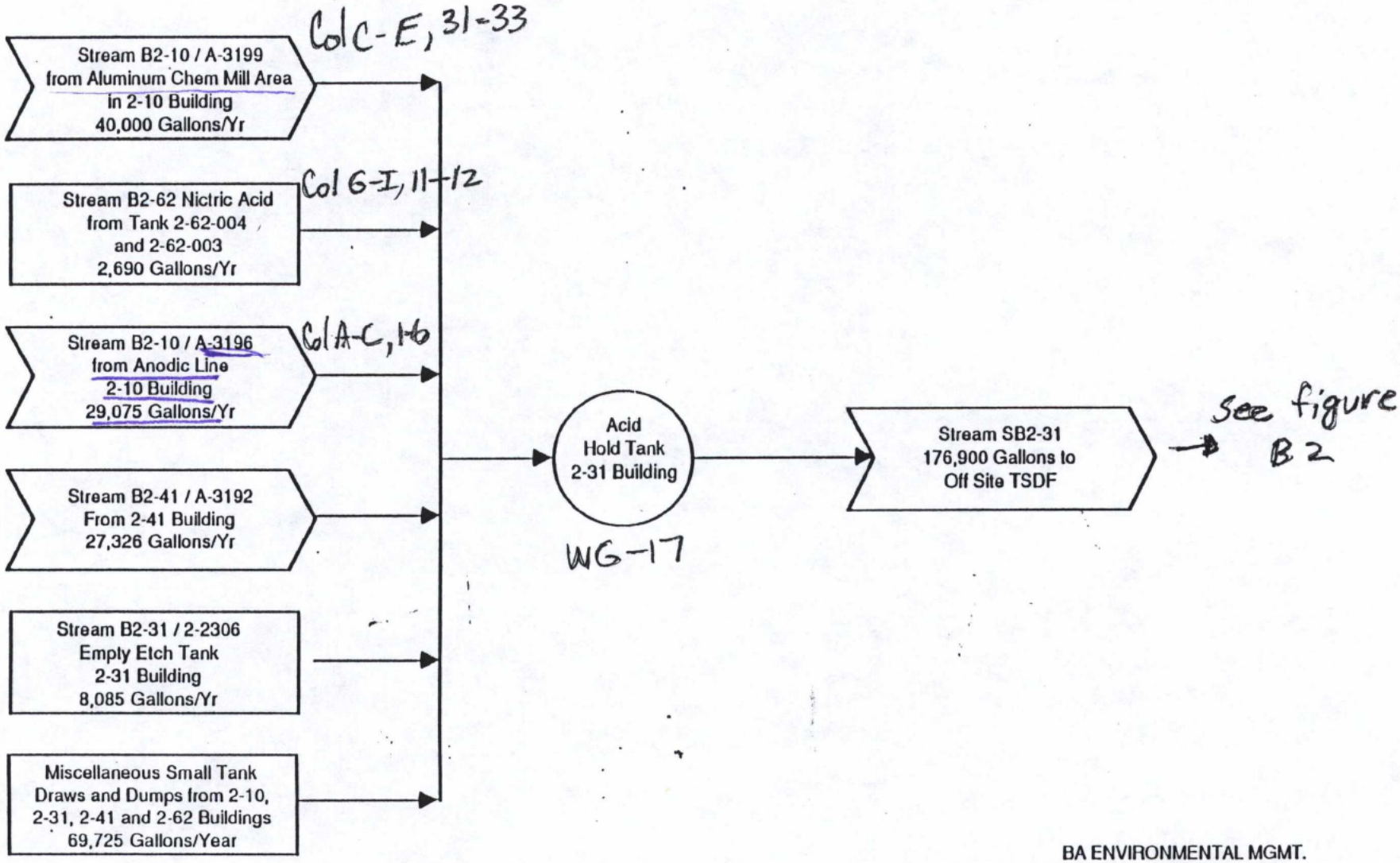
MIXED ACIDS FROM ANODIC LINE ORGANIZATION #A-3196



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
PL6MO

FIGURE SB2-31

MIXED ACIDS STORED IN 2-31 BUILDING'S ACID HOLD TANK



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
TNKMO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM B2-10/A-3196 (TANK 3)

WASTE PROFILE SHEET

Waste Name: Mixed Acid

Annual Generation Rate:

Total 94,800

Generators Source: Building 2-10 (Tank #3, Alodine Line)

Organization Number: A-3196 **Contact name:** Primo Baccetti

Phone Number: 655-1894 **M/S:** 22-09

Is it combined with other wastes?: Yes

Which Wastes?: 4,500 gallons were combined with the contents of the 2-31 Building's Acid Hold Tank.

Waste Physical State: Liquid

Waste Chemical Makeup: pH ≈ 0.5, Hexavalent Chrome = 1.4 oz./gallon, 15 oz./gallon Nitric Acid, Aluminum, Copper, Chromic Acid and Hydrofluoric Acid.

Tank	Volume	Manufacturer	Product Name	Quantity	Significant Components
#3	21, 000 gallons	Anchem	Deoxidizer #6 Makeup	14,935 lb.	Chromic Acid 20% Hydroflouric Acid 2%
		Cascade Chem	Nitric Acid	2,100 gallons	

Reason for Use: Deoxidizer

Waste Generation Process Description: Tank starts with no Aluminum present. As the process continues, Aluminum accumulates. As the Aluminum concentration increases, the Aluminum begins to precipitate out onto the parts and a dump or a draw is authorized. When the production rate is high, draws are authorized. When the production rate is low, complete dumps are authorized. See Figure B2-10/A-3196.

Reason for Disposal: Dumps may be authorized by the Chem Lab for an Aluminum concentration between 16,000 ppm and 18,000 ppm; or the shop for lack of performance.

Specification Requirements: BAC 5765

Transporter: R.R. **Packaging Method:** Bulk

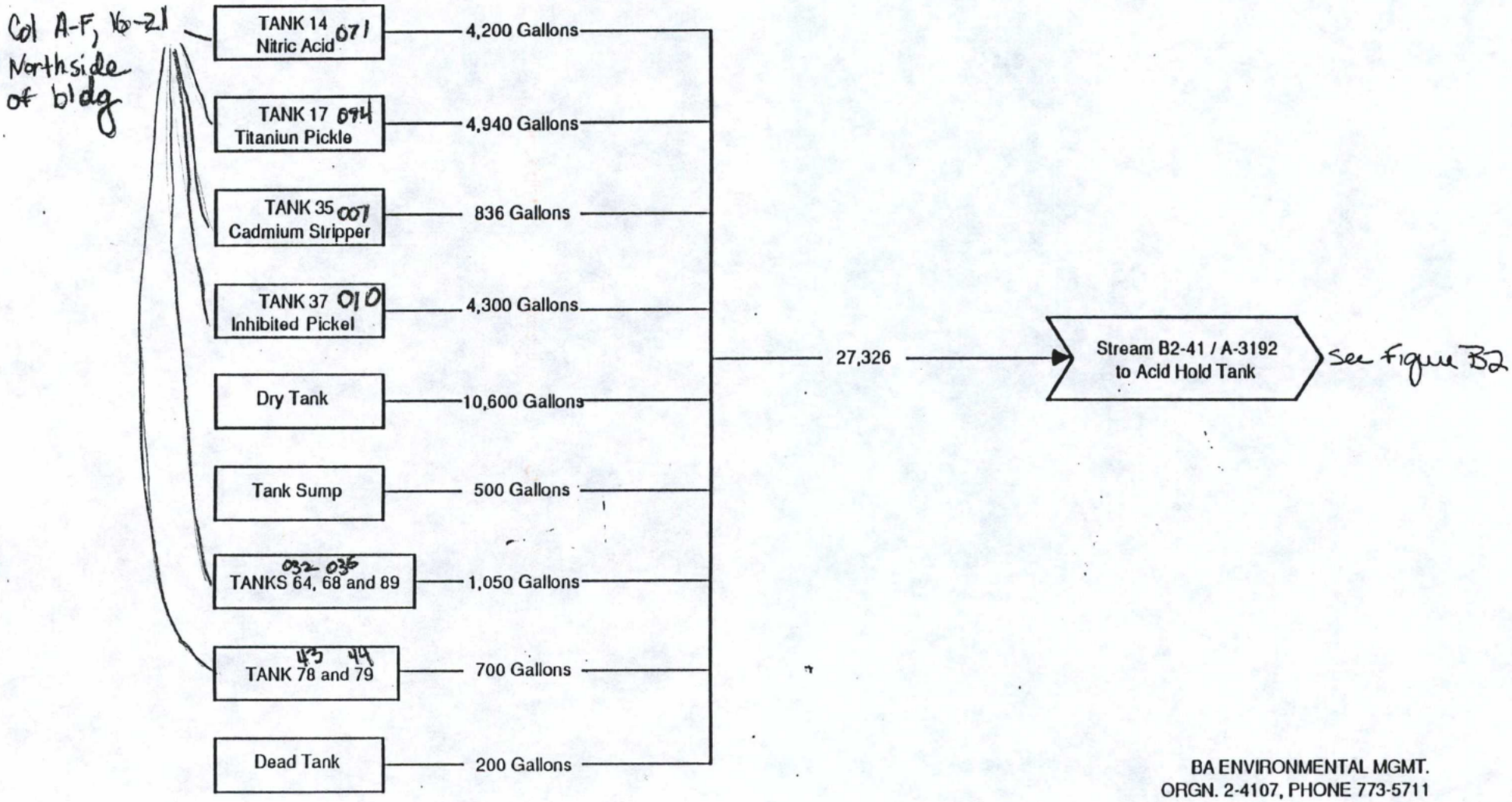
E.P.A. Hazardous Waste Code: D002 and D007

Ultimate Disposition: Dilution, Reduction, Precipitation, Sedimentation; Solids → Hazardous Waste Landfill; Liquids → Neutralized → Sanitary Sewer

NOTES:

FIGURE B2-41 / A-3192

MIXED ACID GENERATED IN THE 2-41 BUILDING CONSOLIDATED IN THE 2-31 ACID HOLD TANK



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
41MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM B2-10/A-3199

WASTE PROFILE SHEET

Waste Name: Mixed Acid

Annual Generation Rate: 40,000 gallons

Generators Source: **Building** 2-10 (Aluminum Chem Mill Area)

Organization Number: A-3199 **Contact name:** Cliff Fischer

Phone Number: 655-1894 **M/S:** 22-09

Is it combined with other wastes?: Yes

Which Wastes?: Those in the 2-31 Building's Acid Hold Tank

Waste Physical State: Liquid

Waste Chemical Makeup: Hydroflouric Acid, Nitric Acid and Chromic Acid

Tank	Volume	Manufacturer	Product Name	Significant Components
#3 & #7	3,000 gallons each	Amchem	Deoxidizer 6	<20% Chromic Acid <2% Hydroflouric Acid
		Amchem	Deoxidizer 17 Replenisher	<80% Potassium Dichromate <4% Ferricyanide <30% Potassium Nitrate <30% Sodium Biflouride

Reason for Use: Deoxidizer used to remove smut from Chem Milling Process. See Figure D2-10B and Table D2-10.

Waste Generation Process Description: As parts are removed from tanks 3 and 7, they carry Chromic Acid dragout into tanks 2 and 6 respectively. To avoid excessive dragout, a temporary procedural modification has been to hose down the parts while they are held above the process tanks. This causes volumetic accumulation in and dilution of tanks 3 and 7. This requires drawoffs at the rate of 2-3 times per week. The drawoffs are consolidated along with other waste streams in the 2-31 Building's 'Acid Hold Tank'. See Figure B2-10/A-3199 and Figure SB2-31.

Reason for Disposal: Bath level rises too high as parts are hosed down above the process baths. Draws are made and concentrate is added to compensate for the accumulation and dilution.

Specification Requirements: BAC #5765

E.P.A. Hazardous Waste Code: D002 and D007

NOTES:

-

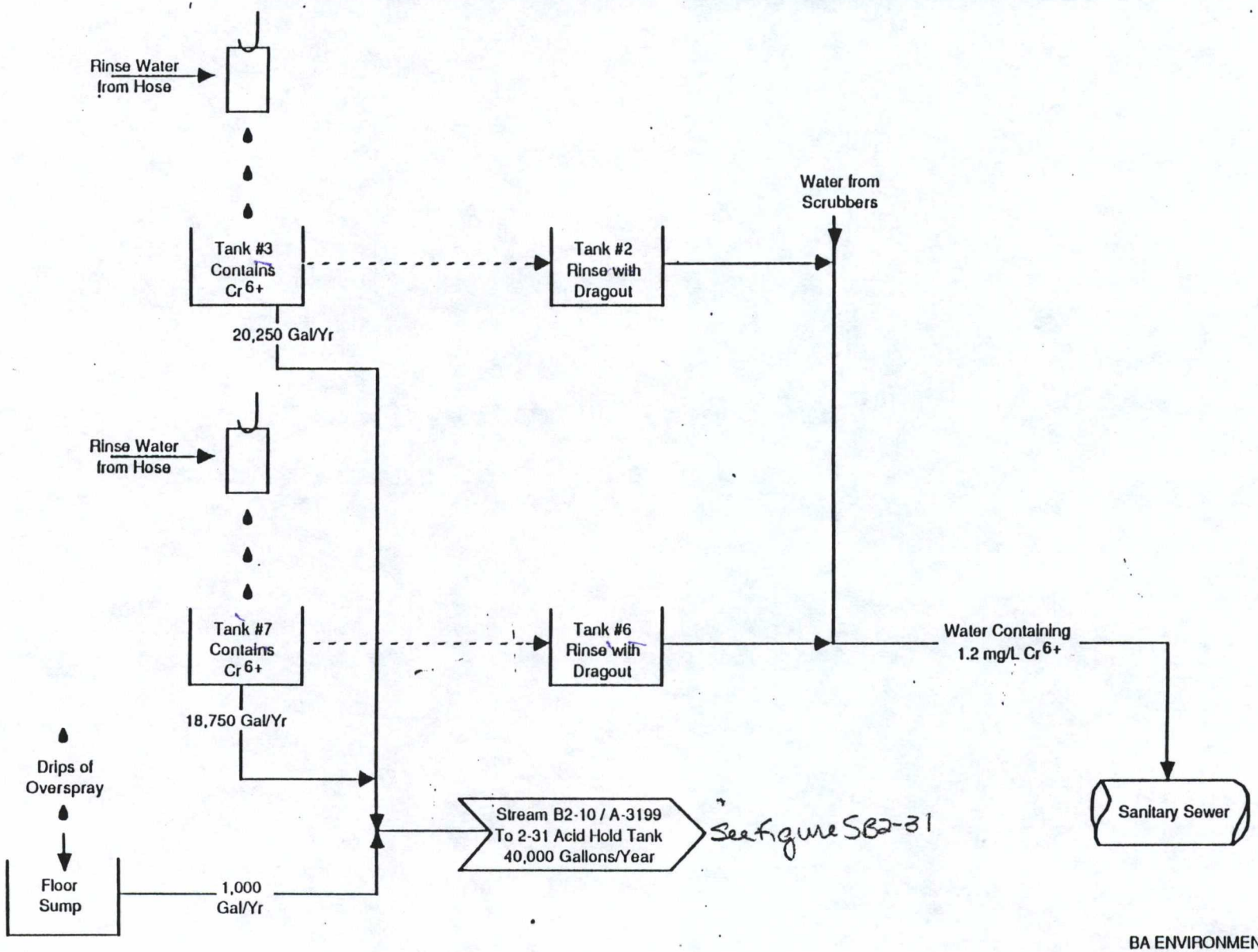
-

-

FIGURE B2-10 / A-3199

MIXED ACID GENERATED AT ALUMINUM CHEM MILL AREA (ORG. #A-3199), 2-10 BUILDING TRANSFERRED TO 2-31 BUILDING

—Cols C-E, 30-34



NOTE:
- - - - - - -Denotes Dragout

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
PL5MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM C2

WASTE PROFILE SHEET

Waste Name: Solvent/Paint

Annual Generation Rate: 21,444 gallons 428 drums

Generators Source: **Building** See Table C2.

Organization Number: Table C2 **Contact name:** Table C2

Phone Number: Table C2 **M/S:** Table C2

Is it combined with other wastes?: Yes

Which Wastes?: Paint, Toluene, Acetone, Bolane Reducer, TR19, TR59

Waste Physical State: Liquid

Waste Chemical Makeup: Methyl Ethyl Ketone, Acetone, Toluene and oil base and two part paints and primers.

Raw Material Manufacturer: Various

Reason for Use: Thin paint; clean guns, parts, cans, barrels

Waste Generation Process Description: Spent MEK, substitute solvents (90:10 MEK/Acetone and 50:50 MEK/Toluene), and 2 part and oil base paints and primers are consolidated in 55 gallon barrels.

Reason for Disposal: Paints and primers are out of specification, expired or no longer used. Solvents are considered "dirty" by the individual painters.

Specification Requirements: Paints and primers have life expectancies after opening and expiration dates.

Transporter: R.R. **Packaging Method:** Drum

T.S.D.F. Destination: Georgetown

Billing Chem Code: FLS510

E.P.A. Hazardous Waste Codes: F005 . 5 drums with D007 & D008

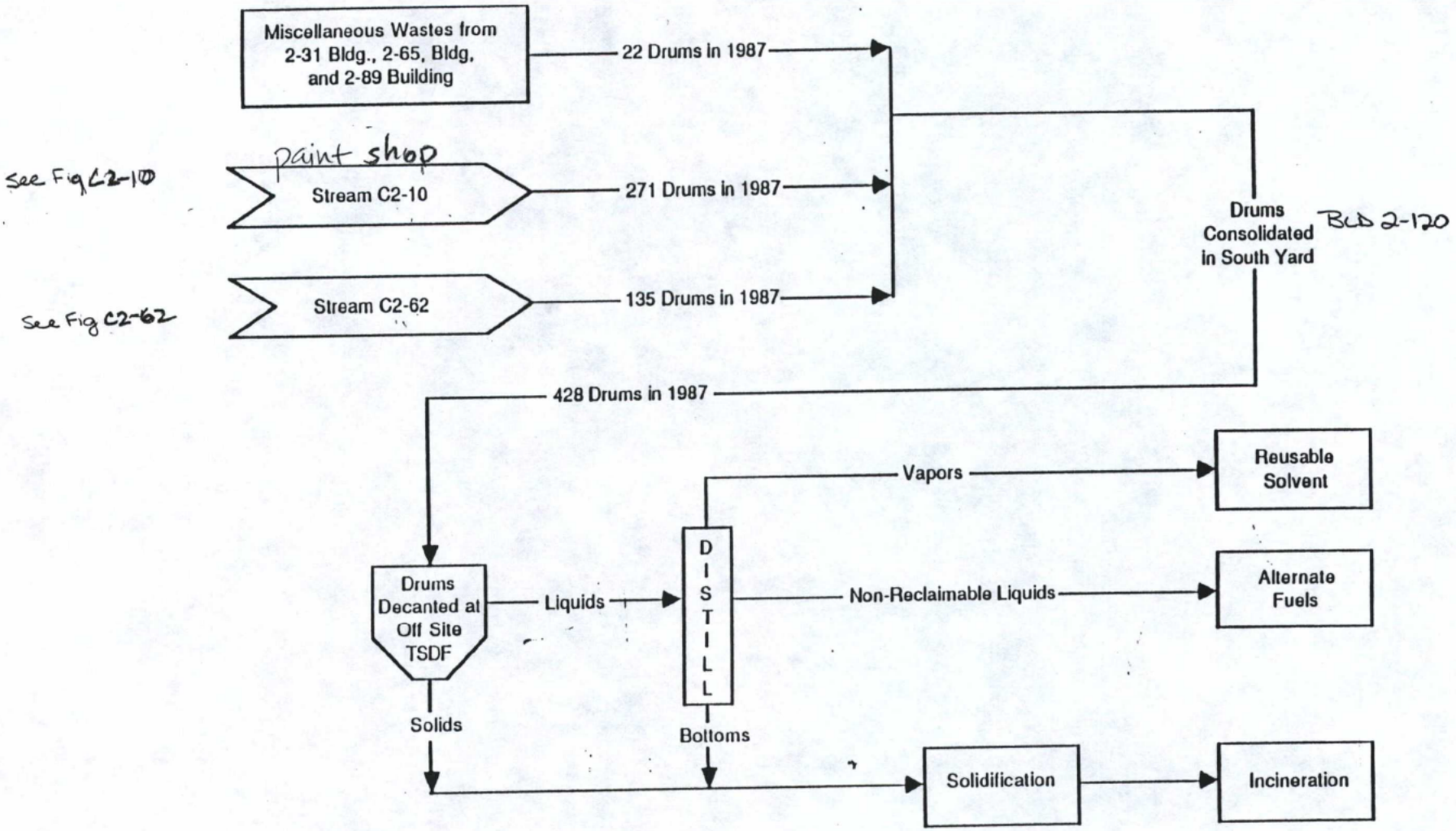
Ultimate disposition: Sedimentation; liquids distilled and solvents recovered; nonrecoverable liquids are used as an alternate fuel; solids solidified and incinerated. See Fig. C2.

TABLE C-2

Building	Estimated % of Solvent	Quantity		Org. Number	Contact Name and Number	
2-10 – See Fig C2-10	≈ 60%	271 drums	(64%)	A-3190 Area 7 ~~A-8107~~	Vern Castor Don Hindman	544-2033 544-2462
Past N-2 2-108 Present N-2	N/D	8 drums	(2%)	2-4343	Bill Vye	655-3317
Past DR5 WJ8 WJ14 2-31 Present DR5 Shop 9-3208	N/D	6 drums		2-2306	Herb Thompson	655-1678
2-41 Process Shutdown	> 10%	2 drums		2-4344	Don Marschall	655-0516
2-62 - see fig C2-62	70% - 80%	135 drums	(32%)	2-2143	John Nalg	655-5131
2-65	N/D	5 drums		A-6130	Bob Stallman	655-9726
2-89 Process Shutdown	N/D	1 drum		4-5322	Brad Lewis	655-5797

FIGURE C2

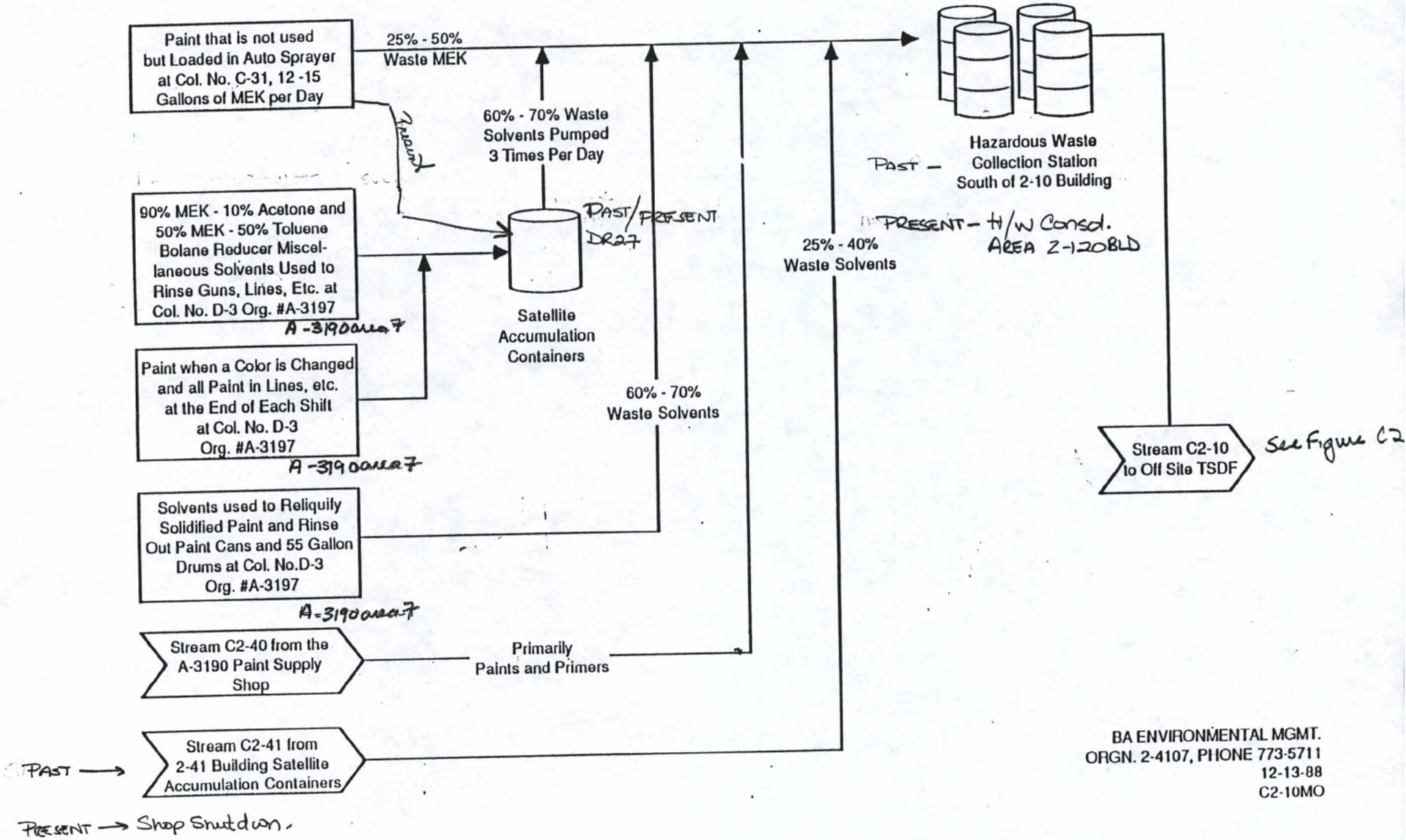
DISPOSAL OF SOLVENT / PAINT WASTE AT PLANT II DURING 1987



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
C2MO

FIGURE C2-10

GENERATION OF SOLVENT / PAINT IN 2-10 BUILDING

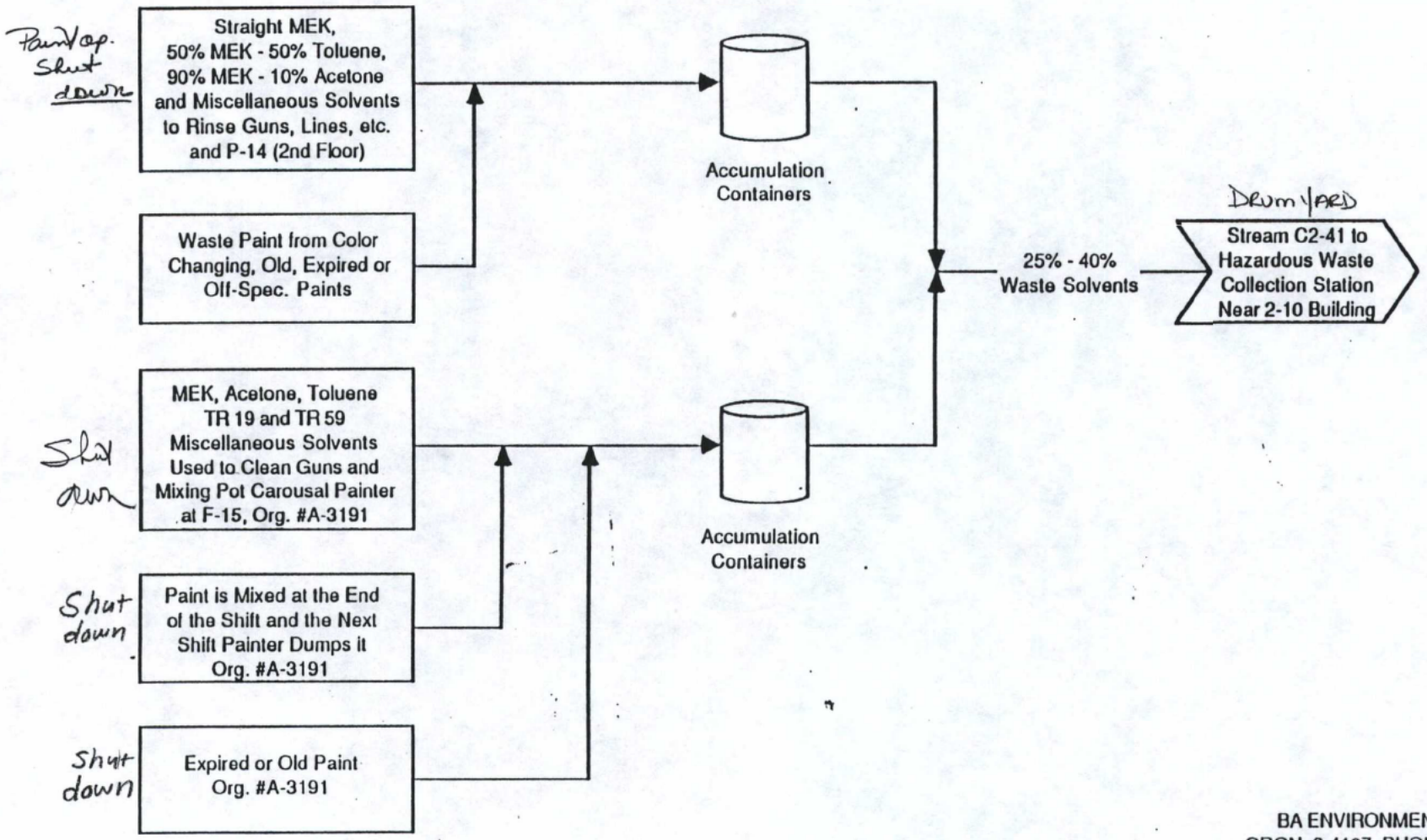


BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
C2-10MO

Post Process

FIGURE C2-41 ~~N/A~~ – Shops Shutdown

GENERATION OF SOLVENT / PAINT IN 2-41 BUILDING



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
C2-41MO

WASTE STREAM I2

OILY WASTE WATER WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

1988: oil/water separation

Alternate fuels <---- oil

Water → Sanitary Sewer

OPTIONS

1: Separate oil and water @ Plant II (proposed for '89); water → ultrafiltration → sanitary sewer;
Oil → Burn in existing or modified boilers @ Plant II
or → sell oil as an alternate fuel

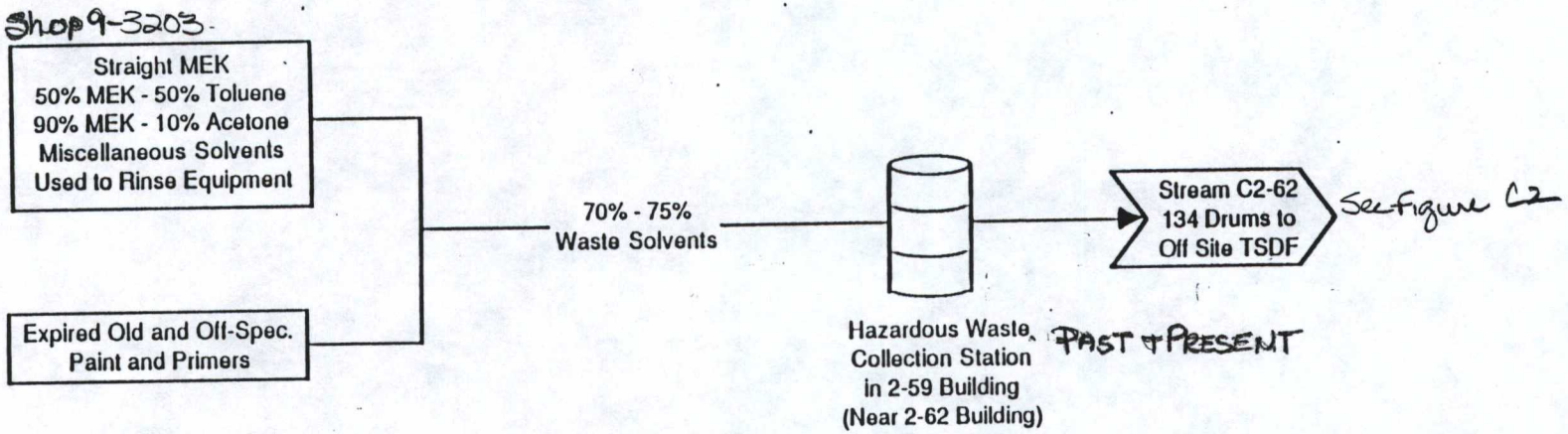
2: Purify with carbon adsorption

3: Segregate water from steam cleaning operations and water from South Yard

4: Evaporate → condense → sewer to Metro water from steam cleaning operations.

FIGURE C2-62

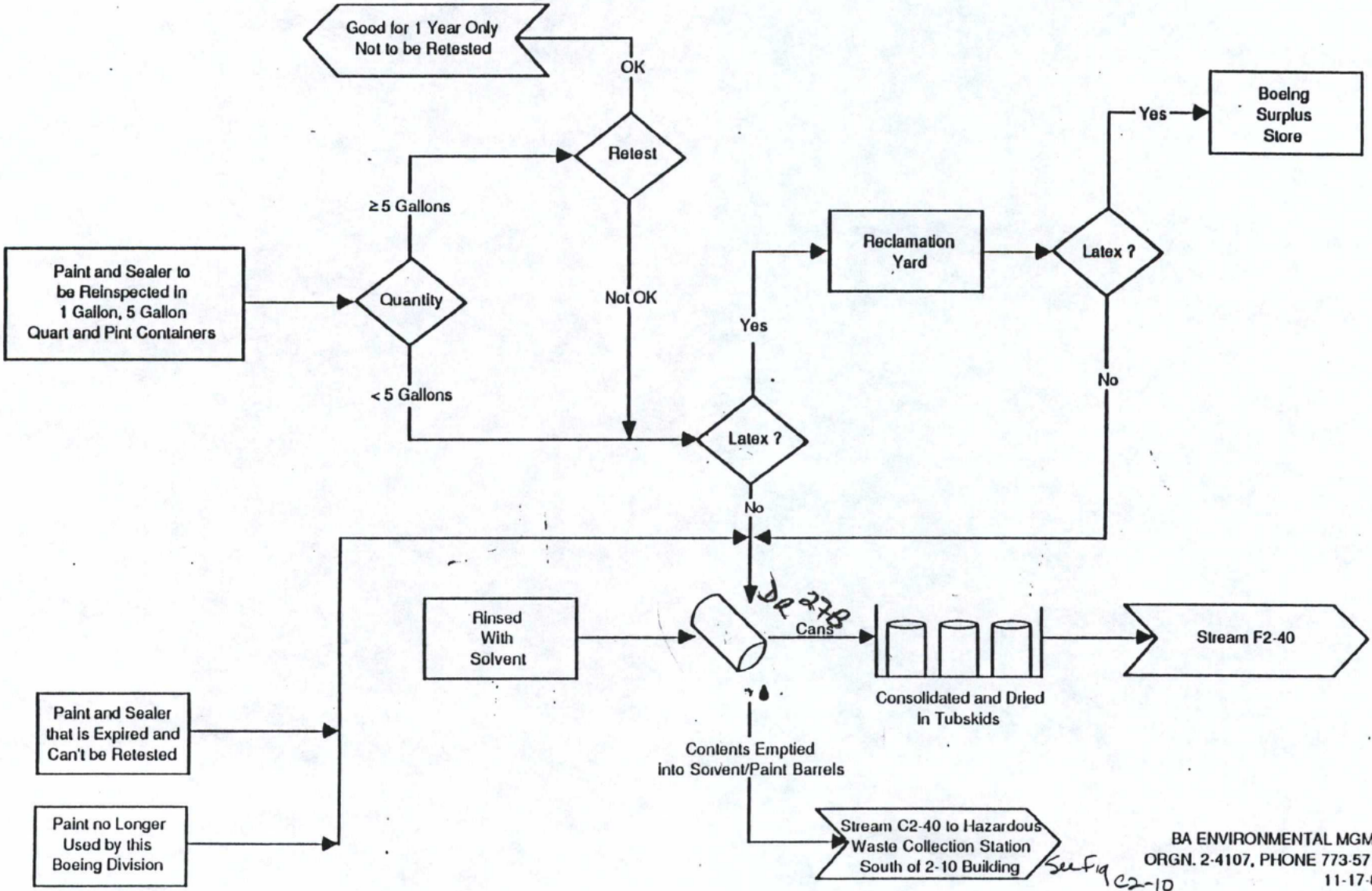
GENERATION OF SOLVENT / PAINT IN 2-62 BUILDING



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
C2-62MO

FIGURE C2-40

GENERATION OF WASTE SOLVENT / PAINT AND CANS IN THE 2-40 BUILDING Shutdown
A-3190 PAINT SUPPLY SHOP



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
C2 40MO

WASTE STREAM C2

SOLVENT/PAINT WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Sedimentation; Liquids Distilled & Solvents recovered
Bottoms & Solids Incinerated

CHANGES IMPLEMENTED

1: Solvent/Paint segregation (use bung locks if necessary)

2: Utilize a two rinse scheme (first dirty, second clean) in the spray gun rinsing areas.

3: Distillation & Solvent recovery (proposed for '89)

WASTE STREAM D2-10

WASTE PROFILE SHEET

Waste Name: Aluminum Chem Mill

Annual Generation Rate: 102,264 gallons

Generators Source: **Building** 2-10

Doors D-31, E-31

Organization Number: A-3199 **Contact name:** Clifford Fischer or Tom Donahue

Phone Number: 655-1894 **M/S:** 22-09

Is it combined with other wastes?: No

Waste Physical State: Sludge

Waste Chemical Makeup: Sodium Hydroxide 20 oz/gallon, Aluminum 5-10 oz/gallon, pH ≈ 13, T.E.A. 5 oz/gallon (Triethanolamine), Sodium Sulfide 2.5 oz/gallon.

Raw Material Manufacturer: Boeing Company

Product Name: Chem Mill Solution

Significant Components:

Triethanolamine (TEA) 5 oz/gallon
Aluminum 2.5 oz/gallon
Sodium Hydroxide (NaOH) 20 oz/gallon
Sodium Sulfide 2.5 oz/gallon

Reason for Use: Remove Aluminum to make planes lighter.

Waste Generation Process Description: "Adcoat 828" is applied to the aluminum piece and cured. Adcoat is carved and removed from portions of the piece that need to be milled down. The parts are dipped in the "Aluminum Chem Mill" solution and up to 100/1000 of an inch of aluminum is removed. See Figure D2-10B and Table D2-10.

Reason for Disposal: Etch rate is decreased by the excess accumulation of Aluminum. Aluminum concentration goes from 2.5 oz A1/gallon of solution to 10-14 oz A1/gallon of solution.

Specification Requirements: Aluminum concentration must be less than 14 oz./gallon of solution.

Transporter: R.R. **Packaging Method:** Bulk

T.S.D.F. Destination: Tacoma

E.P.A. Hazardous Waste Codes: D002 D003

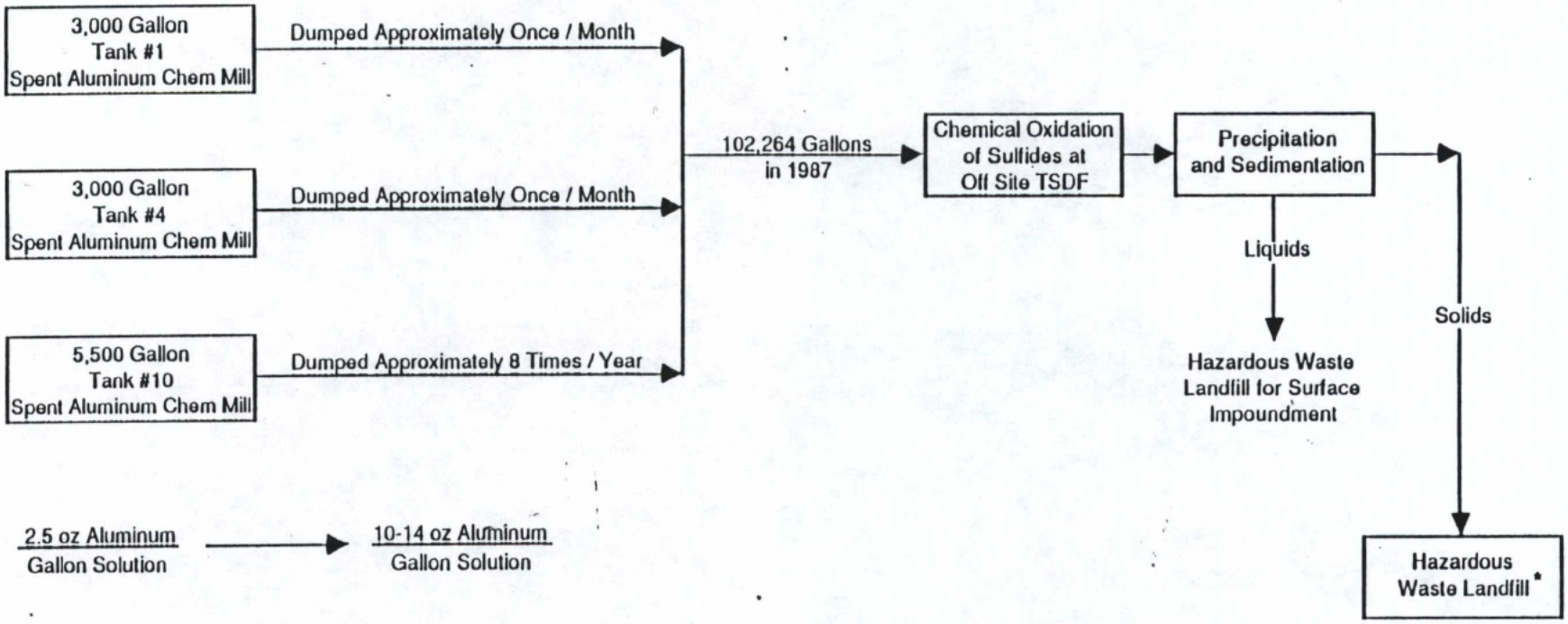
Ultimate disposition: Sulfides are oxidized, Metals → Precipitation → Hazardous Waste Landfill; liquids → Surface Impoundment @ Hazardous Waste Landfill. See Fig. D2-10A.

NOTES:

FIGURE D2-10A

ALUMINUM CHEM MILL WASTE GENERATION DESCRIPTION

Cols C-E, '31-33



NOTE: * This waste will be stabilized prior to landfill after 1988

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
D2-10AMO

WASTE STREAM D2-10

ALUMINUM CHEM MILL WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Sulfides oxidized → precipitation

Surface Impoundment
(U) Settled Solids

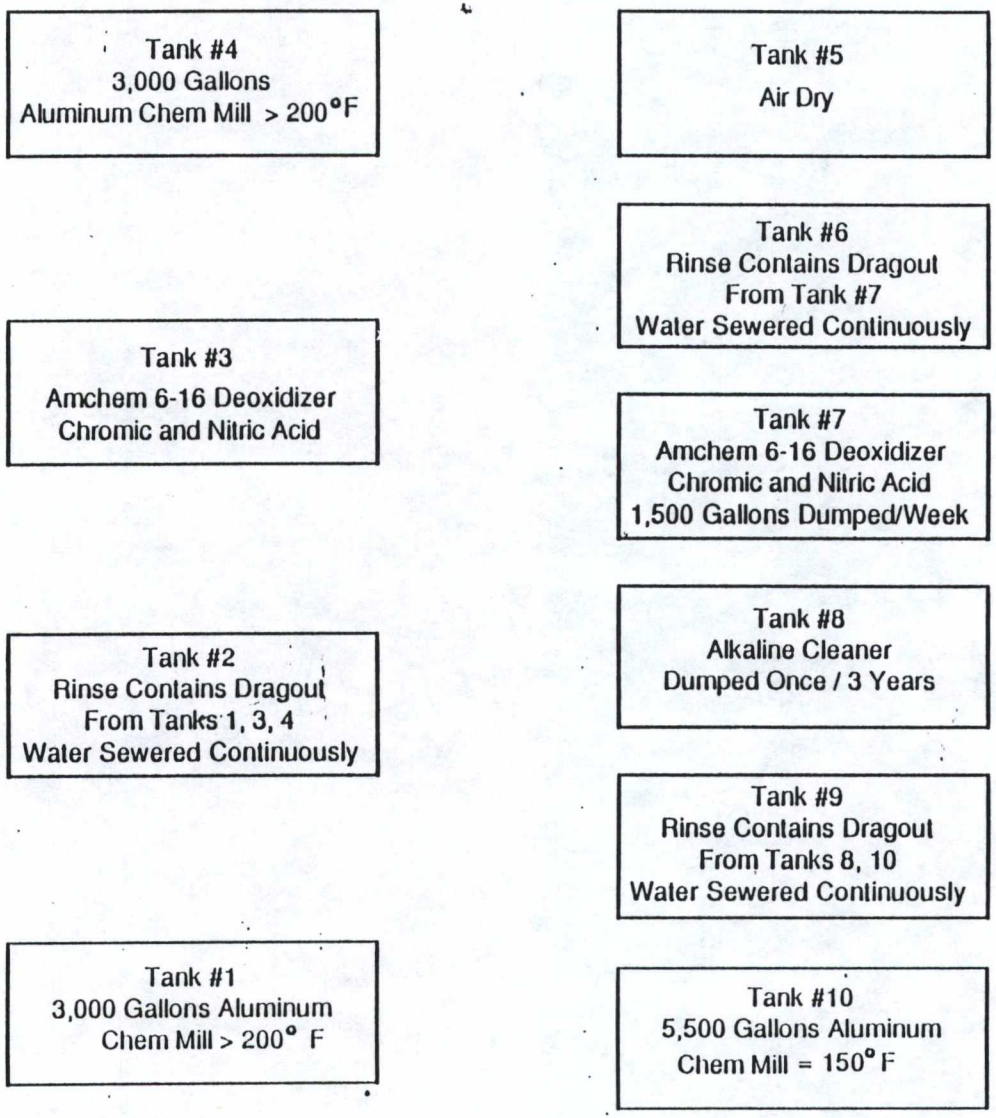
OPTIONS

Regenerate process bath by removing Aluminum.

FIGURE D2-10B

ALUMINUM CHEM MILL TANK CONFIGURATION

(Cols C-E, 31-33)



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
ACMO

TABLE D2-10

ALUMINUM CHEM MILL PROCESS DESCRIPTIONS

Process	Tank Order
Aluminum Chem Mill	1 → 2 → 3 → 2 or 4 → 2 → 3 → 2
Chemical Etch	8 → 9 → 10 → 9 → 7 → 6 → 5
Chemical Debur	8 → 9 → 10 → 9 → 7 → 6 → 5
Guage Reducer	8 → 9 → 10 → 9 → 7 → 6 → 5
Pre Buffing Treatment	8 → 9 → 7 → 6 → 5

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM E2

WASTE PROFILE SHEET

Waste Name: Coolant

Annual Generation Rate: 162,850 gallons

Generators Source:

Building	Organization	Quantity
2-91 coolant not listed for 2-91 old sites	2-4322 empty folder for new sites	162,150 gallons
2-40	2-2145	8 Drums oldsite: F-12 newsites: P-15, C-11, N-1
2-41	2-4322 & A-3180	2 Drums old site: D-16, D-18, P-17 new site: J-17, L-14, L-21, M-14, O-21
2-83	2-2145	4 Drums oldsite: J-18, can't find new sites
2-10	A-3140	present: F-45 & past

Contact name: Cal Patterson, Gary Hoover

Phone Number: 655-9535

Is it combined with other wastes?: Yes

Which Wastes?: Tramp Oil, Mop Water, 5 Star, Cool Lube 220 and Trimsol

Waste Physical State: Liquid

Waste Chemical Makeup: Organic Ethanolamines, Poly Alkylene Glycol, Oxygenated Organic Acids, Water, Preservatives, Petroleum Oil, Petroleum Sulfonate, Chlorinated Alkene Polymer, Nonionic Surfactant, Organic Alcohol, Polypropylene Glycol, Substituted Indole, Silocone Defoamer.

Product Name	Manufacturer	Significant Components
Coolube 220	Pacific Chemical Co.	Dicthanolamine 4% Tricthanolamine 5%
Trim sol	Master Chemical Co.	"Nonhazardous" by OSHA
Cimcool Five Star 40	Cincinnati Milacron Marketing Co.	"Nonhazardous" by OSHA

Reason for Use: Cool machines while machining parts

Waste Generation Process Description: Although most of the "Trimsol" is recycled (See Figure E2A), some trimsol, all 5 star and all cool lube 220 coolants are combined with mop water and waste tramp oils and grit removed from the recycled Trimsol. This consolidated array is placed in tanks 1 and 2 in 2-91 Building before being shipped to an offsite TSDF for treatment. See Figure E2B.

Reason for Disposal: Dust, grit and oil enter into coolant. Bacteria biodegrade surfactants and other additives. Coolant loses its integrity through contamination and biodegradation.

Specification Requirements: Must be a homogeneous mixture of organic materials and water, and be oil and grit free.

Transporter: R.R. **Packaging Method:** > 99% Bulk

T.S.D.F. Destination: Pier 91

Billing Chem Code: E2

E.P.A. Hazardous Waste Codes: WT02 X004

Ultimate disposition: Trimsol Recovered and Reused; Others: Emulsion Broken at Offsite TSDF → Oil/Water Separation; Oil Reclaimed for BTU value; Water Filtered/Oxidized → Sanitary Sewer

NOTES:

WASTE STREAM E2

WASTE COOLANT AND MOP WATER WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

PRE-1987 PRACTICE

Before 3/86: consolidation oil/water separation

Oil used as an alternate fuel;

Water → Filtration and/or Oxidation → Sanitary Sewer

POST-1987 PRACTICE

3/86: Trimsol coolant segregated → pasturized → purified with a centrifuge → reused in process

Mopwater and other coolants → Mop water and coolants treated as before

OPTIONS

1: Shipping all coolant out in bulk would eliminate the use of barrels and save $4,500

2: Recycle "5 star" and "Coolube" in separate coolant recovery systems

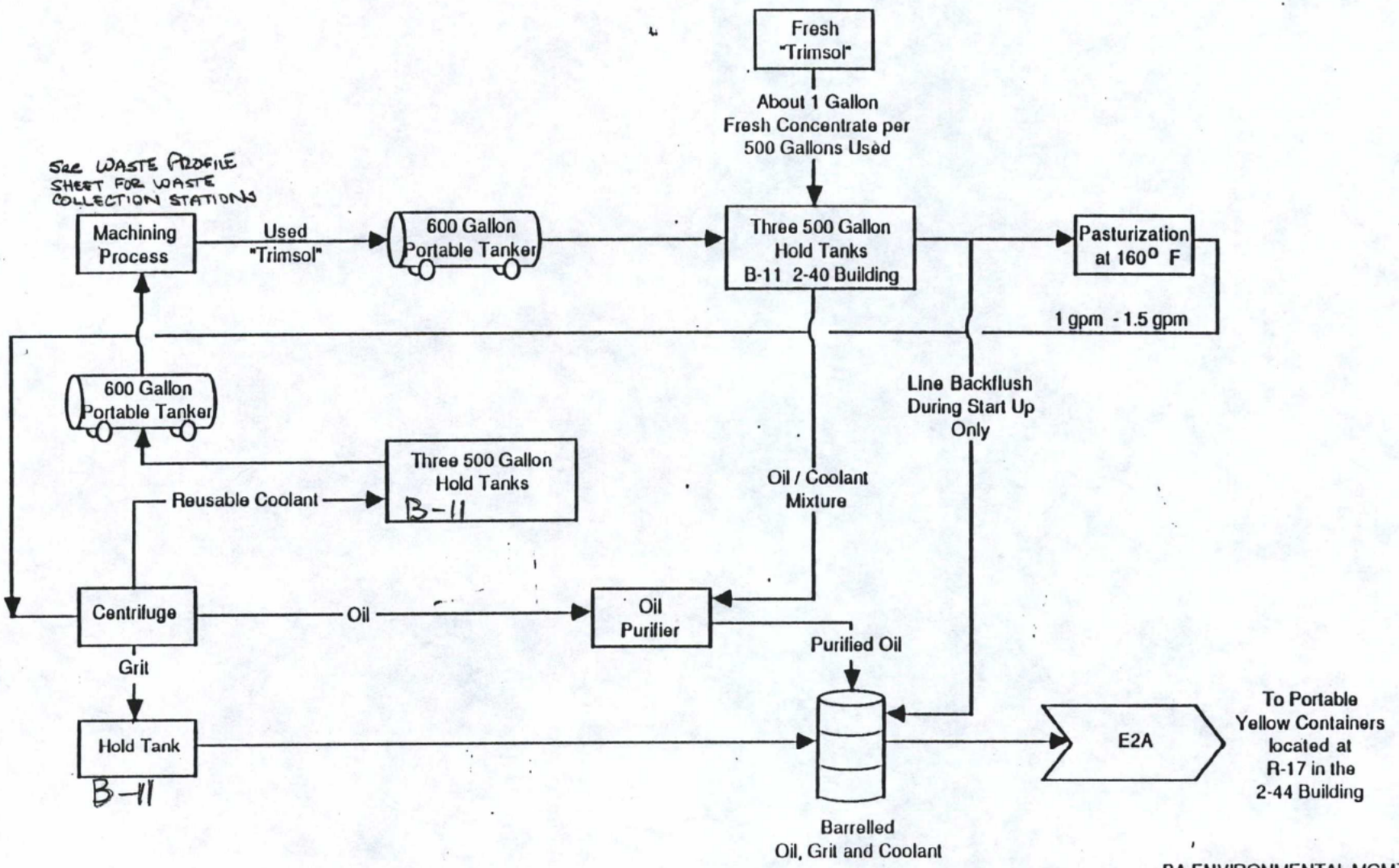
3: Send purified oil, from the Trimsol coolant recovery system, out in bulk to be recycled instead of combining it with waste solids.

4: Separate oil and water near 2-91 Building (proposed for '87); water → ultrafiltration → sanitary sewer

Burn oil in existing of modified boilers, or sell as an alternate fuel.

FIGURE E2A

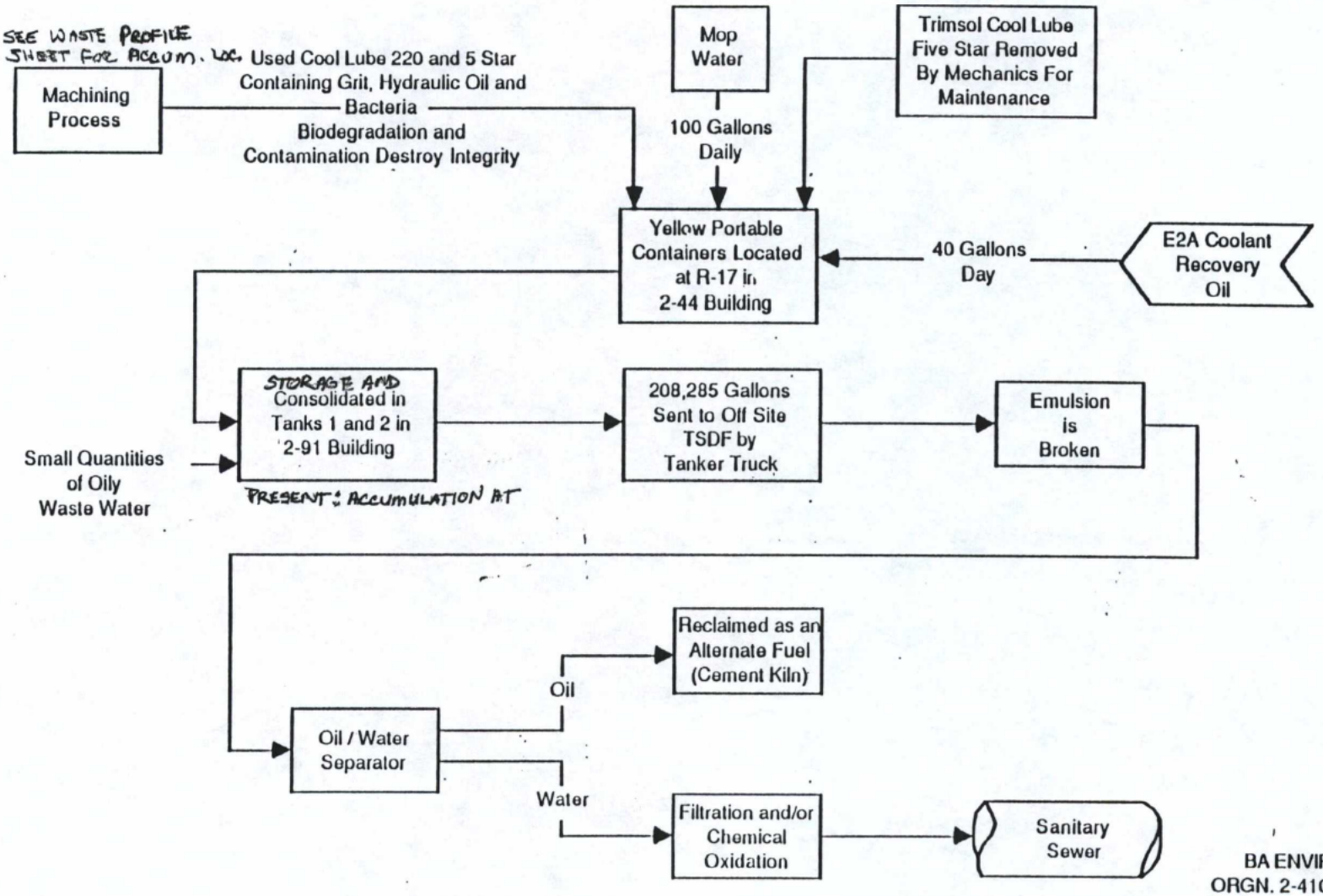
"TRIMSOL" COOLANT RECOVERY



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
PLMO

FIGURE E2B

"COOL LUBE 220" AND "FIVE STAR" COOLANT WASTE GENERATION PROCESS



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
PL44MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM F2

WASTE PROFILE SHEET

Waste Name: Cans

Annual Generation Rate: 65 tubskids 82 drums

Generators Source: Buildings See Table F2

Organization Number: Table F2 **Contact name:** Table F2

Phone Number: Table F2

Waste Physical State: Solid

Description: Pint, Quart, 2 Gallon and 5 Gallon, Metal and Plastic Containers, Containing Paints, Primers, Epoxy, Bondo Resin Hardner, Etc; Aerosol Cans Containing Spray Paint, Solvent, Industrial Lubricant, Etc. and/or Pressure

Reason for Use: Contained hazardous materials

Waste Generation Process Description: Used small containers and aerosol cans contain undried residual amounts of hazardous waste. Also, small containers full of unused, out of spec or expired hazardous material are disposed of as hazardous waste. Often unpressurized, dried cans are disposed of as hazardous waste. At this point, it is unresolved whether or not State or Federal regulations permit the disposal of unpressurized, 'empty' aerosol cans in municipal trash.

Transporter: R.R.

T.S.D.F. Destination: Georgetown

E.P.A. Hazardous Waste Codes: One or more of the following: D001, D002, D007, D008, WT02

Ultimate disposition: Consolidated → Crushed → Hazardous Waste Landfill; Liquids Consolidated → Solvent Extraction for reuse; residues → incinerated. See figure F2.

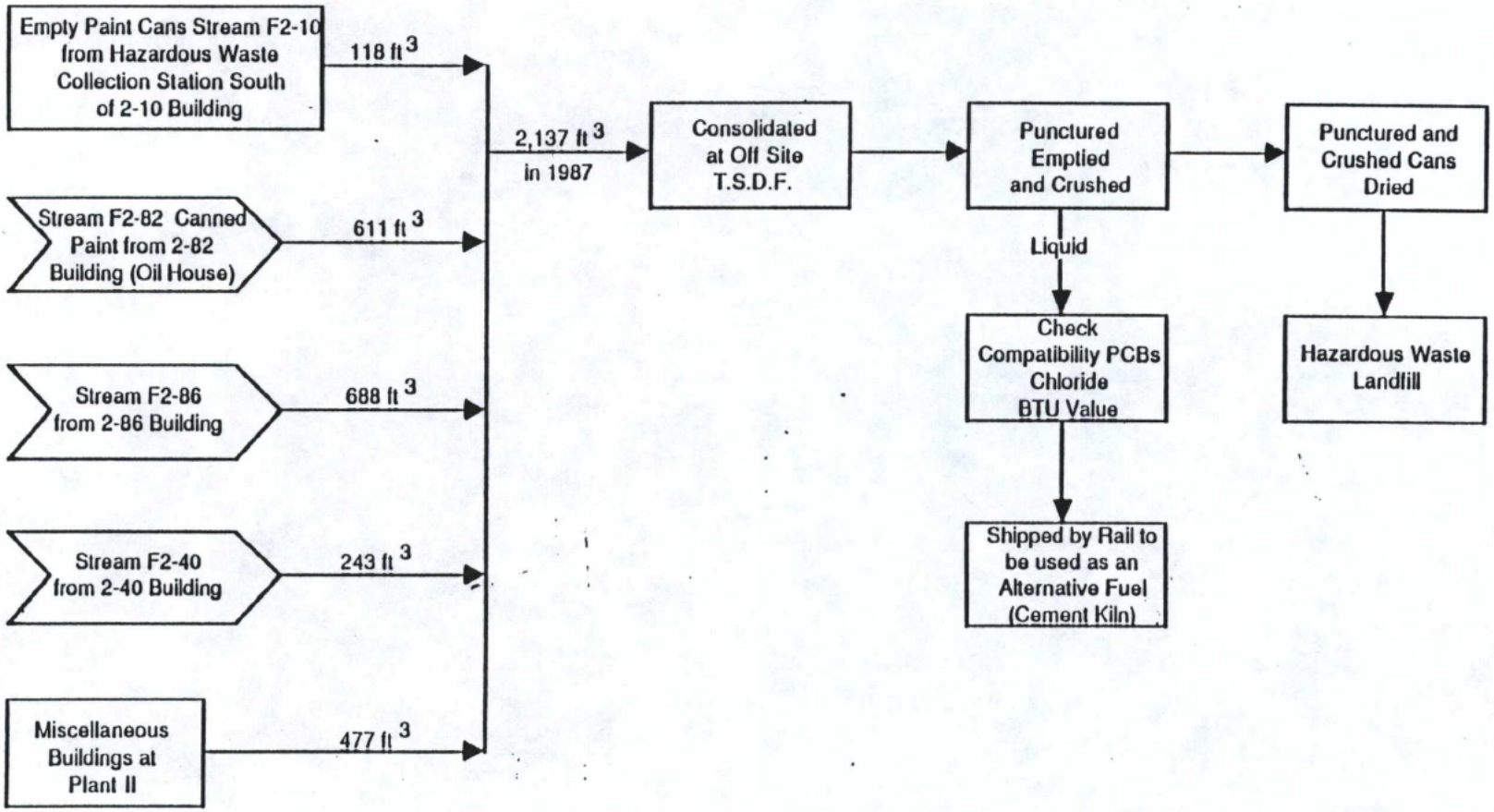
NOTES:

HAZARDOUS WASTE
SOURCES OF CANS BY BUILDING AT PLANT II

TABLE F2

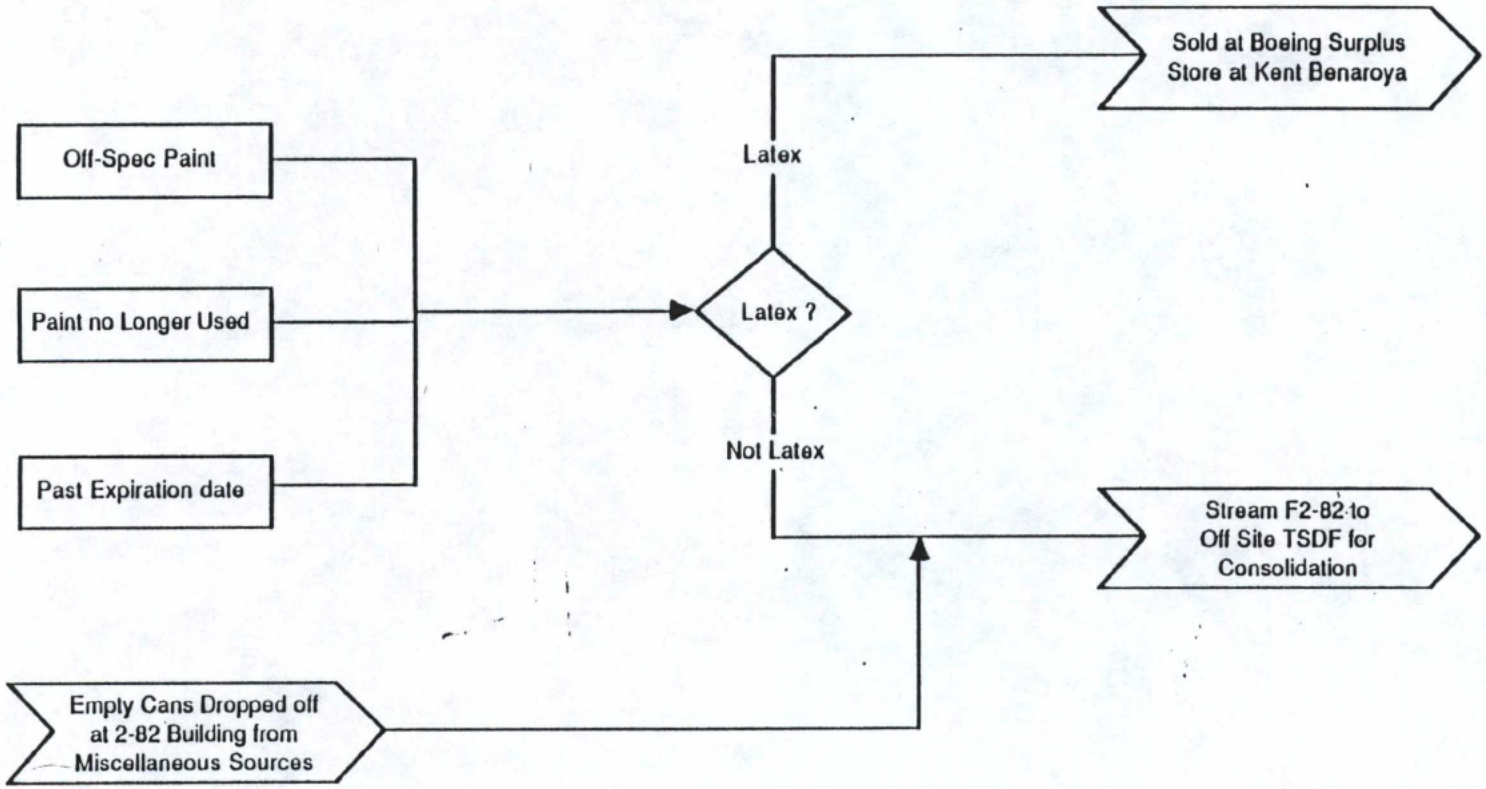
Building	Amount Tubskid	Drum	% of total	Organization Number	Contact & Phone #
2-01	2	-	*	2-4881	
2-10	5	-	6%	A-3197	Vern Castor 544-2033
2-15	1	-	*	2-4344	
2-16	-	1	*	A-3750	
2-31	-	6	*	2-2147	
2-36	-	1	*	A-3750	
2-40	10	1	11%	A-3190	Bertha Jacobsen 655-1301
2-41	1	8	4%	A-3191	
2-412	-	2	*	A-3351	
2-62	1	11	5%	2-2143	
2-65	-	2	*	2-4345	
2-80	1	-	*	2-4100	
2-82	24	6	29%	2-2242	Gary Kmieciak 655-9199
2-83	-	1	*	A-2330	
2-86	17	39	32%	A-3750	Shannon Jurgen 655-2154
2-89	2	3	3%	4-5322	
2-108	2	2	3%	2-4366	
Total	66	82			

FIGURE F2
ULTIMATE DISPOSITION OF WASTE CANS



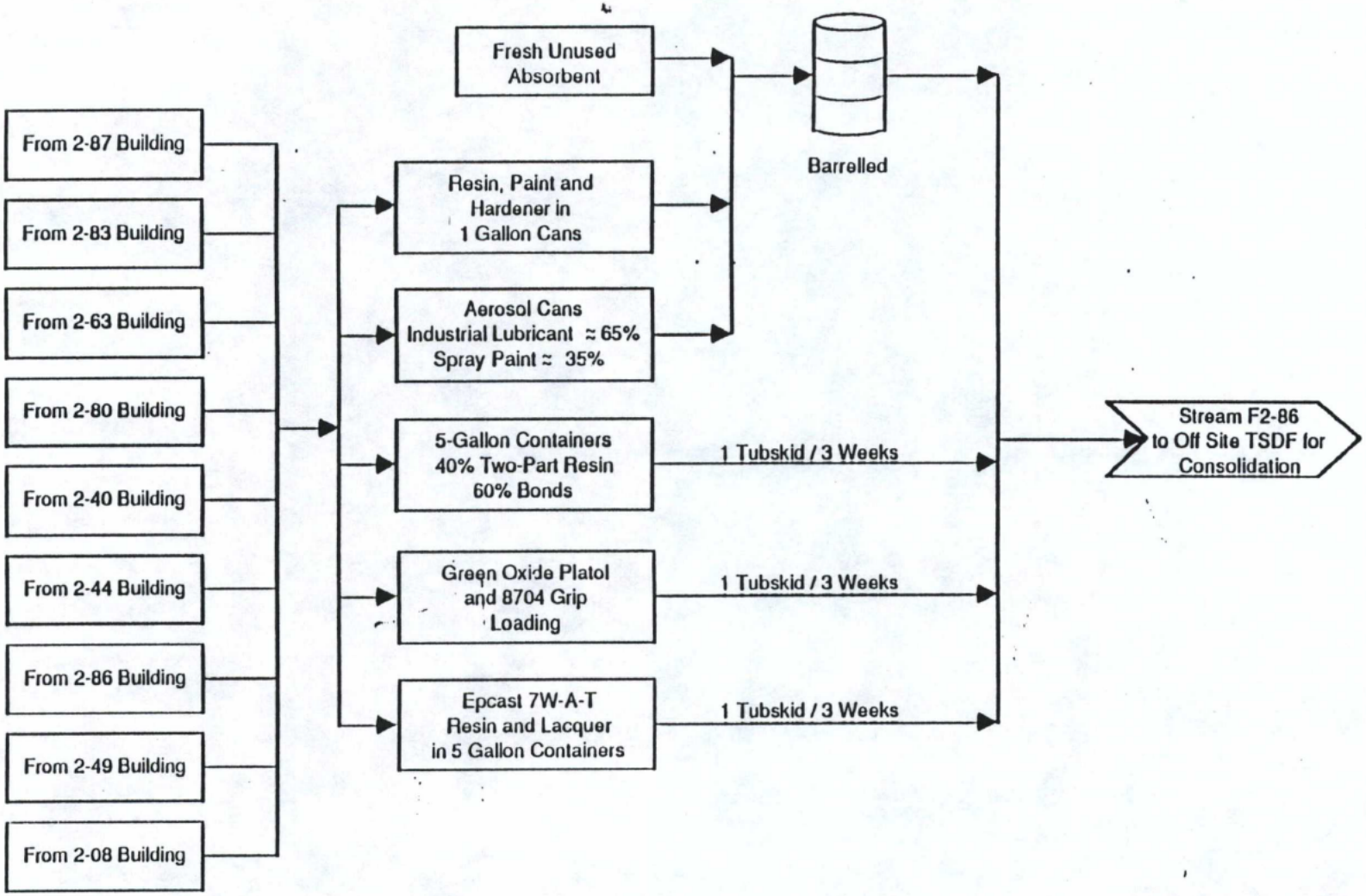
BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
F2MO

FIGURE F2-82
CONTAINERIZED PAINT AT 2-82 BUILDING (OIL HOUSE)



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
F2-82MO

FIGURE F2-86
ACCUMULATION OF WASTE CANS AT THE 2-86 BUILDING



NOTE: Only Organization Numbers A-3750 and A-2330 use this Collection Station

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

12-13-88
F2-86MO

WASTE STREAM F2
CANS, WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Consolidated → Crushed → (U) Landfill
Liquids consolidated
Solvents extraction → residues incinerated

OPTIONS

1: Ordering paint etc. that is subject to rapid expiration in smaller cans to avoid waste.

2: Ordering paint etc. that is not subject to rapid expiration in 55 gallon refillable drums.

3: Use refillable aerosol cans which use compressed air, order the raw material in refillable 55 gallon drums.

4: Educate hazardous waste monitors to segregate municipal trash from hazardous waste

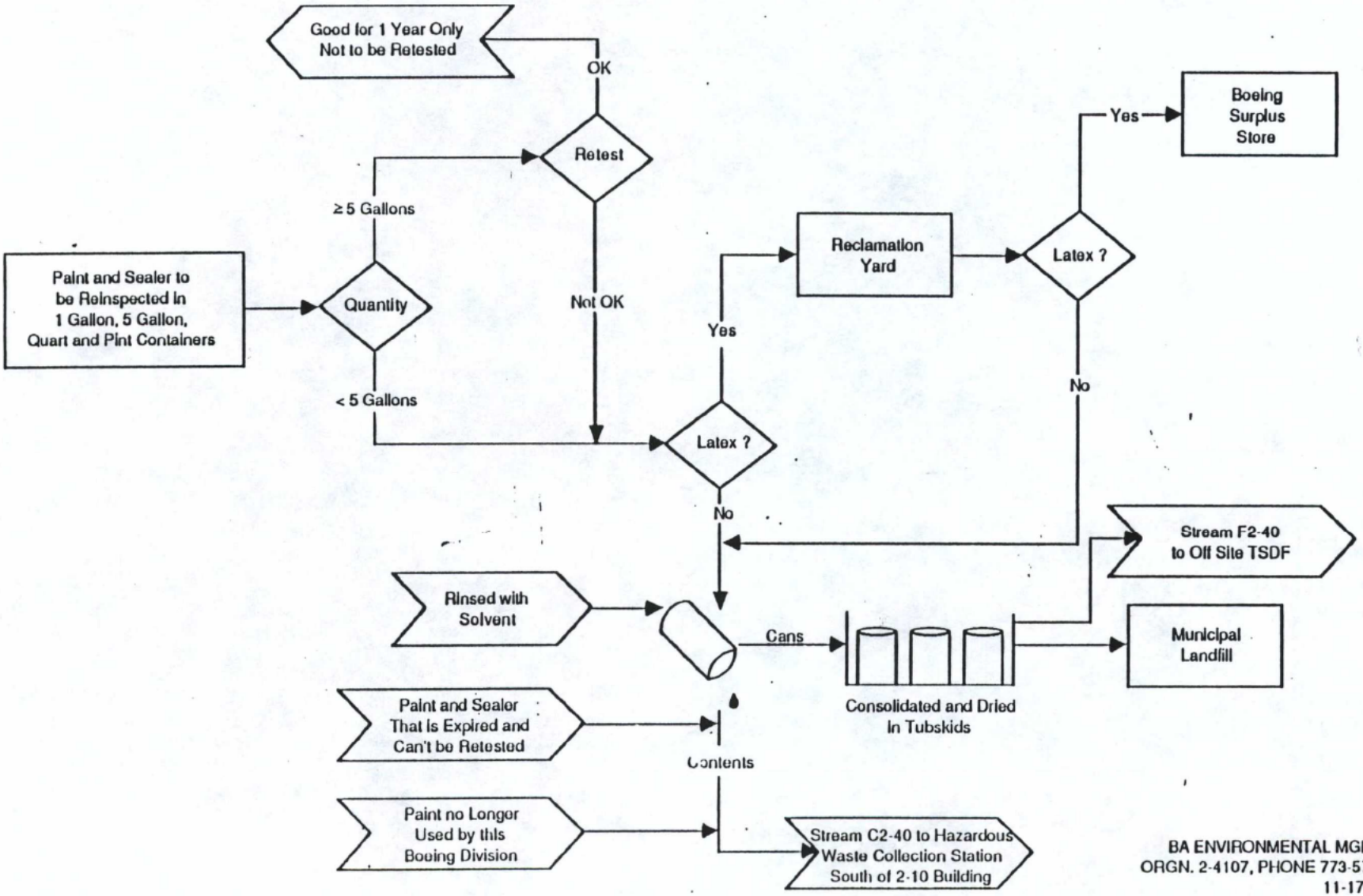
5: Send cans full of unused unexpired paint to other Boeing divisions for reuse

6: Puncture and drain aerosol cans → municipal landfill

7: Segregate full and empty cans.
Crush and consolidate → offsite TSDF ----------→ (U) Landfill
or → directly ----------→ (U) Landfill

FIGURE F2-40

GENERATION OF WASTE SOLVENT / PAINT AND CANS IN THE 2-40 BUILDING
A-3190 PAINT SUPPLY SHOP



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
F2-40MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM G2

WASTE PROFILE SHEET

Waste Name: Empty drums

Annual Generation Rate: 1284 drums

Generators Source Site: KSC, Thompson Site, Developmental Center, Plant II, South Park, Tulalip, EMF, Everett, Renton Benaroya, Kent Benaroya, Boeing Field

Is it combined with other wastes?: Yes

Which Wastes?: All drums are consolidated together.

Waste Physical State: Solid

Waste Chemical Makeup: Residual amounts of hazardous waste in fiber and steel drums.

Significant Components: 1236 drums contained hazardous waste and 48 drums contained "acutely hazardous waste" (cyanide salts, pesticides, etc.) as defined by Washington State Regulations.

Reason for Use: To transport hazardous materials into Boeing plants.

Waste Generation Process Description: Drums are emptied completely. If not, the drum is returned to the generator. If it is undamaged, < 17 gauge steel and emptied, it is burned out or steam cleaned and sold to a drum reclaimer. Barrels that contained 5 star or caustic beads are given to a reclaimer. Drums that are damaged > 17 gauge steel, nonmetal or contained acutely hazardous waste are triple rinsed, smashed and delabeled at an offsite TSDF before being sent to a Hazardous Waste Landfill. See Figure G2.

Reason for Disposal: Despite the fact that drums containing non-acutely hazardous waste are not regarded as hazardous waste by government regulations, they are disposed of as hazardous waste as dictated by Company Policy.

Transporter: R.R. **Packaging Method:** Bagged and placed on pallets.

T.S.D.F. Destination: Georgetown

Billing Chem Code: Mostly ESL120 and RSL120

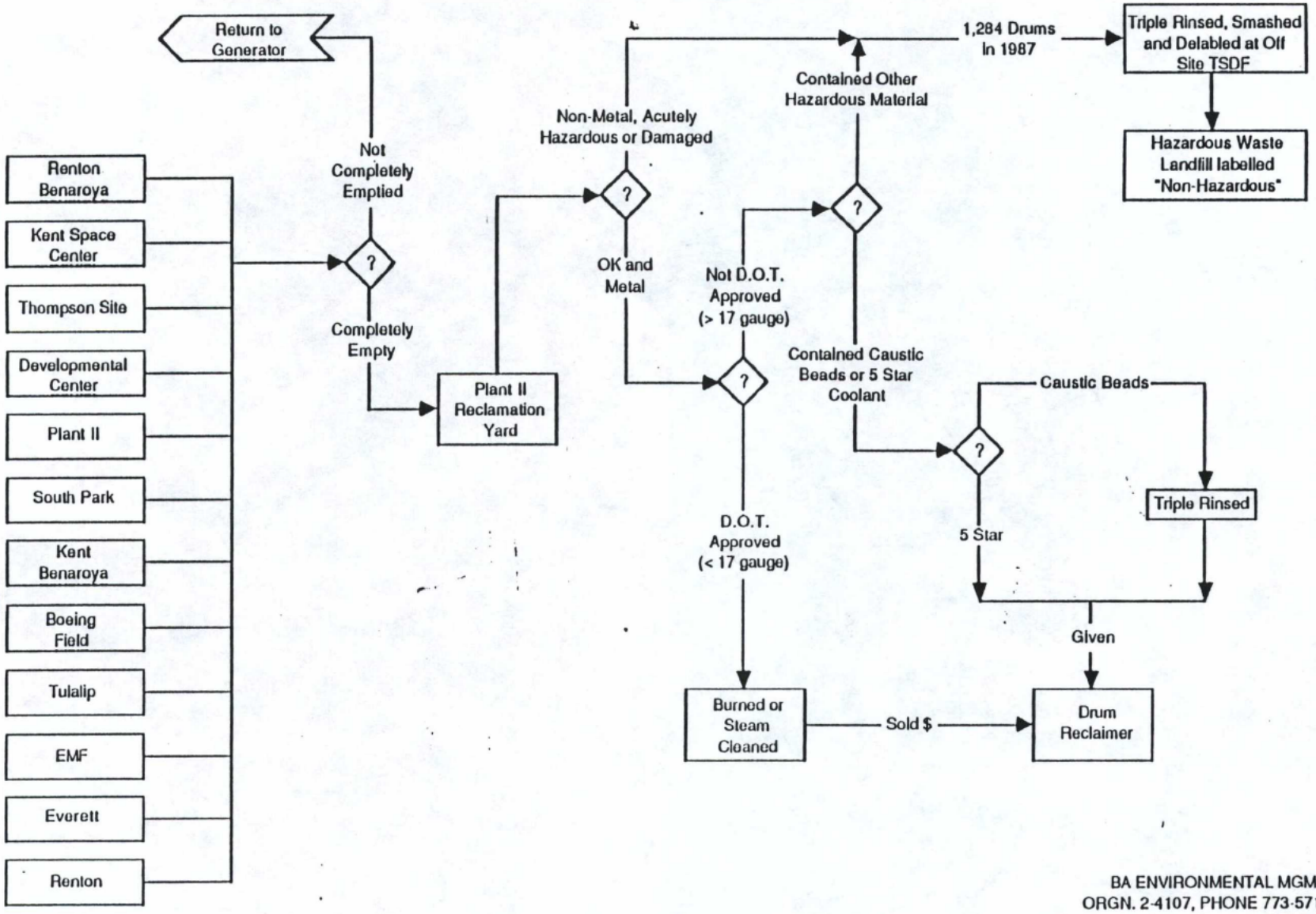
E.P.A. Hazardous Waste Codes: D001, D002, F001, F007 or WT01

Ultimate disposition: Crushed, delabeled and sent to a Hazardous Waste Landfill.

NOTES:

FIGURE G2

EMPTY DRUMS



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
G2MO

WASTE STREAM G2

EMPTY DRUMS, WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Crushed, delabeled, triple rinsed, labeled "non-hazardous" (U) Landfill

OPTIONS

1: Adopt a corporate policy in which buyers request raw materials in A) refillable drums (i.e. w/a deposit) or B) 17 gauge or thicker metal drums. Add the disposal cost of the unreusable drum to bids that do not comply with this request.

2: Triple rinse drums, to which the content will be diluted and pour the rinsate into the process bath. Reclaim the drum

3: Crush & send directly ----------> (U) Landfill

If any questions, contact BA Environmental 773-5711.

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM H2

WASTE PROFILE SHEET

Waste Name: Paint Booth Sludge

Annual Generation Rate: 89,700 gallons

Generators Source:

Location		Amount		
Building	Organization	Bulk (Gallons)	Containerized	% of Total
2-10	A-3197-D4	38,950	3 drums	44%
2-31/286	2-2306-W59	2,100	—	2%
2-41	A-3193-A13	40,950	—	47%
2-09	—	—	1 drum, 1 tubskid	*
2-62	2-2143-G11	5,850 (Probably closer to 20,000)	3 drums	7%
2-65	A-6130	—	30 drums	*
2-108	2-4364	1,200	—	1%

* Less than 2%

Is it combined with other wastes?: Yes

Which Wastes?: Water used to clean booth out.

Waste Physical State: Sludge

Waste Chemical Makeup: Water and solidified paints and primers (primarily 2 part epoxies and oil base)

Raw Material Manufacturer: Various

Product Name: Various

Significant Components: Various

Reason for Use: BA and BCA Specifications

Waste Generation Process Description: Paint over spray is sucked into a wall of cascading water. The paint settles out quickly and forms a dense sludge at the bottom of the reservoir. The entire reservoir, (water & sludge) is removed along with rinse water. See Fig. H2.

Reason for Disposal: Sludge level gets too high in the reservoir and must be removed.

Transporter: R.R. & Air

Packaging Method	TSDF Destination	Code
Bulk	Tacoma	C5
Barrel	Georgetown	EGP300

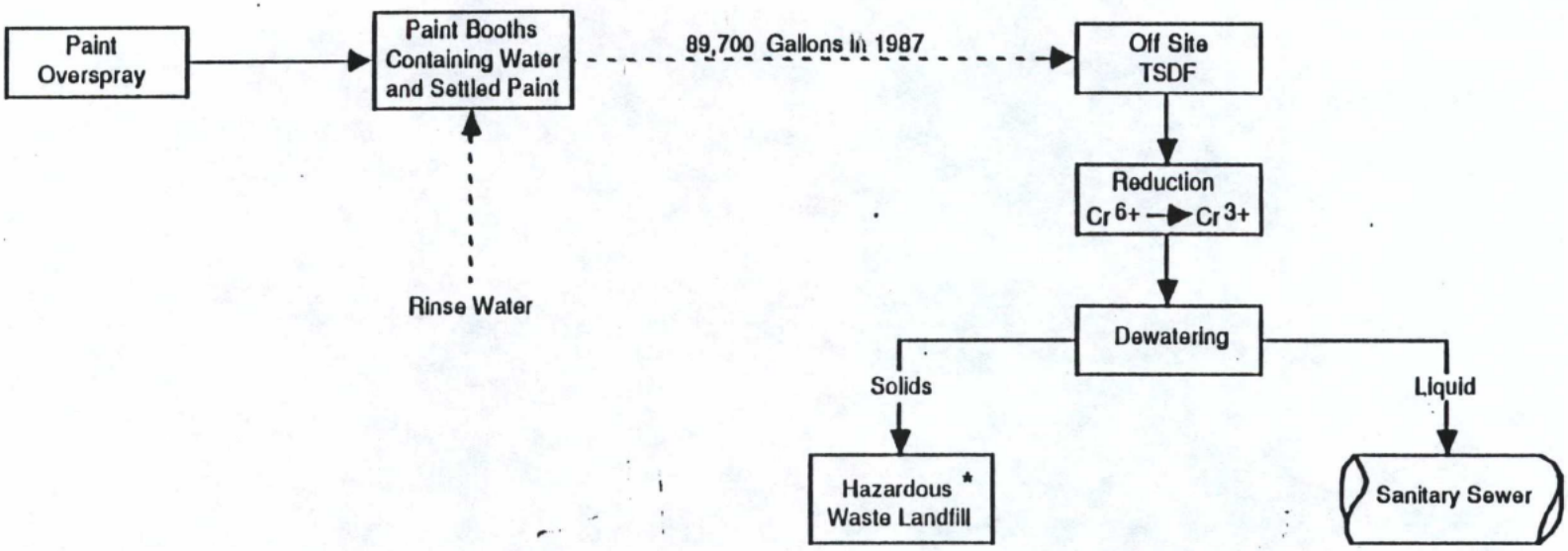
E.P.A. Hazardous Waste Codes: D007, WT02

Ultimate disposition: Reduction → Precipitation → Sedimentation; solids to Hazardous Waste Landfill; Water Purified → Sanitary Sewer

NOTES:

FIGURE H2

PAINT BOOTH SLUDGE GENERATION AND DISPOSAL



- - - - - - - Denotes Paint Booth Cleaning 1 or 2 Times / Year

——— Denotes Continuous Flow

* NOTE: Solids will be Stabilized Prior to Landfill after 1988

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
H2MO

WASTE STREAM H2

PAINT BOOTH SLUDGE WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

(TR): $Cr^{6+} \rightarrow Cr^{3+}$
(VR): Dewatering; Liquids → Sanitary Sewer
(U) Settled Solids

CHANGES IMPLEMENTED

(S) Settled Solids 8/88

OPTIONS

1: Use mobile or stationary centrifuge to dewater the sludge & return the water back to the paint booth once/month
Stabilize @ offsite TSDF → (S) Sludge
or → (U) Directly to landfill

2: Retrofit with dry filters (note: replaces one waste stream with another).

3: Dewater sludge with filter press and return water back to the booth
Stabilize @ offsite TSDF → (S) Sludge

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM I2

WASTE PROFILE SHEET

Waste Name: Oily Water

Adjusted Disposal Cost:

Code	Quantity
F2	141,150 gallons
F4	6,000 gallons
B	1,750 gallons
E1	5,000 gallons
Barrel	26 barrels
Total	155,240 gallons

Annual Generation Rate: 155,240 gallons

Generators Source:

Building	Quantity	Organization
2-01	1,655 gallons	R-3940
2-10	3 Dms	2-4302
2-15 — Automotive	3,350 gallons	4-6220
2-31	1 Dm	2-3106
2-41 — Machine Pits	2,400 gallons & 14 Dms	2-4100
2-63	4 Dms	2-4322
2-66	4 Dms	6-1760
2-83	6,400 gallons	
2-91	174,100 gallons	2-4344

Contact name: Roger Sampair

Phone Number: 644-2409 **M/S:** 19-35S

Is it combined with other wastes?: No

Waste Physical State: Liquid

Waste Chemical Makeup: Water contaminated with coolant and other oils.

Raw Material Manufacturer: N/A

Product Name: N/A

Significant Components: N/A

Waste Generation Process Description: Water in south yard storm drains is sent to an oil/water separator. Water that exceeds 100 ppm total oils and grease is sent to a 15,000 gallon hold tank. Some of this water is sent back to the separator for another attempt at further separation. 155,000 gallons were treated at an offsite TSDF last year. See Fig. I2.

Specification Requirements: <100 ppm oils and grease for discharge to Metro.

Transporter: R.R., Air, UDO **Packaging Method:** 99% Bulk

T.S.D.F. Destination: Bulk → Pier 91
Drums → Georgetown

Billing Chem Code: See next page.

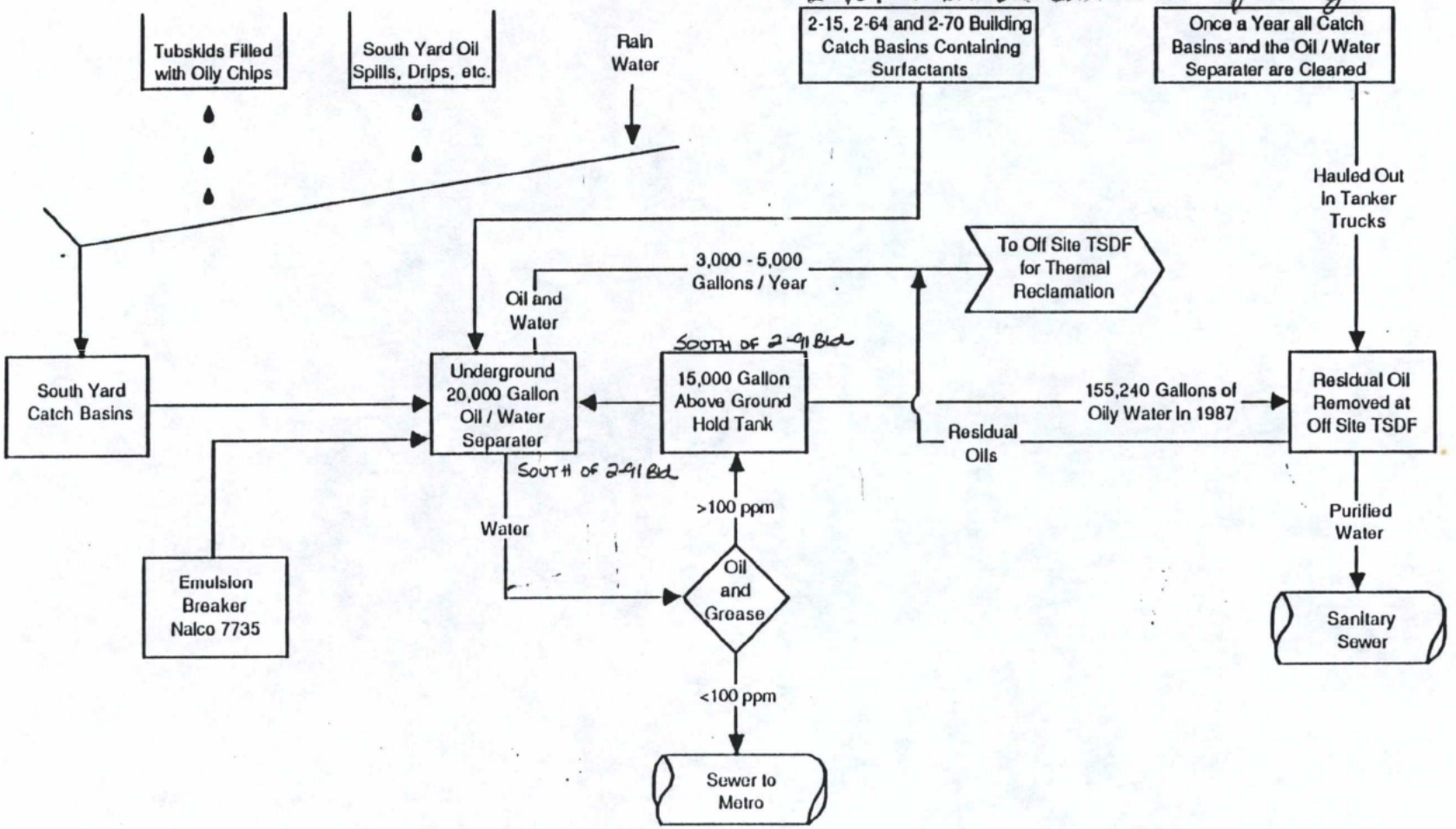
E.P.A. Hazardous Waste Codes: N/A

Ultimate disposition: Oil/Water Separation; Oil → Alternate Fuel; Water → Filtration and/or Oxidation → Sanitary Sewer.

NOTES:

FIGURE 12
OILY WASTE WATER

2-15: south end of Bldg
2-64: outside near northeast corner of Bldg
2-70: outside on east side of Bldg



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
12-13-88
12MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM J2

WASTE PROFILE SHEET

Waste Name: Solvent Contaminated Rags

Annual Generation Rate: 11,180 gallons
(212 Drums)

Generators Source: See Fig. J2 & J2-86.

Building	Amount Drums	Organization Number
2-01	14 (7%)	R-3970
2-09	1	A-3190
2-10	59 (28%)	A-3197
2-108	8 (4%)	2-4343
2-24	1	2-2152
2-31	15 (7%)	2-2147 2-2306
2-40	4 (2%)	2-2152
2-411	5 (2%)	2-2145
2-412	21 (10%)	2-2153
2-44	4 (2%)	2-2152
2-62	24 (11%)	2-2143
2-65	5 (2%)	A-6130
2-86	51 (24%)	A-3750 & A-2330

Waste Physical State: Solid

Waste Chemical Makeup: Rags, Q-tips, Papertowels, and Cheesecloth contaminated with Paint, Primer, Epoxy, Resin, Skydrol, MEK, Acetone, Toluene, and other solvents.

Reason for Use: Cleaning & painting equipment & parts, fiberglass construction, etc.

Reason for Disposal: Become contaminated with dirt, epoxy or paint and cannot be reused.

Transporter: R.R. **Packaging Method:** Drum

T.S.D.F. Destination: Georgetown

Billing Chem Code: ESLS12

E.P.A. Hazardous Waste Codes: WT02, D001

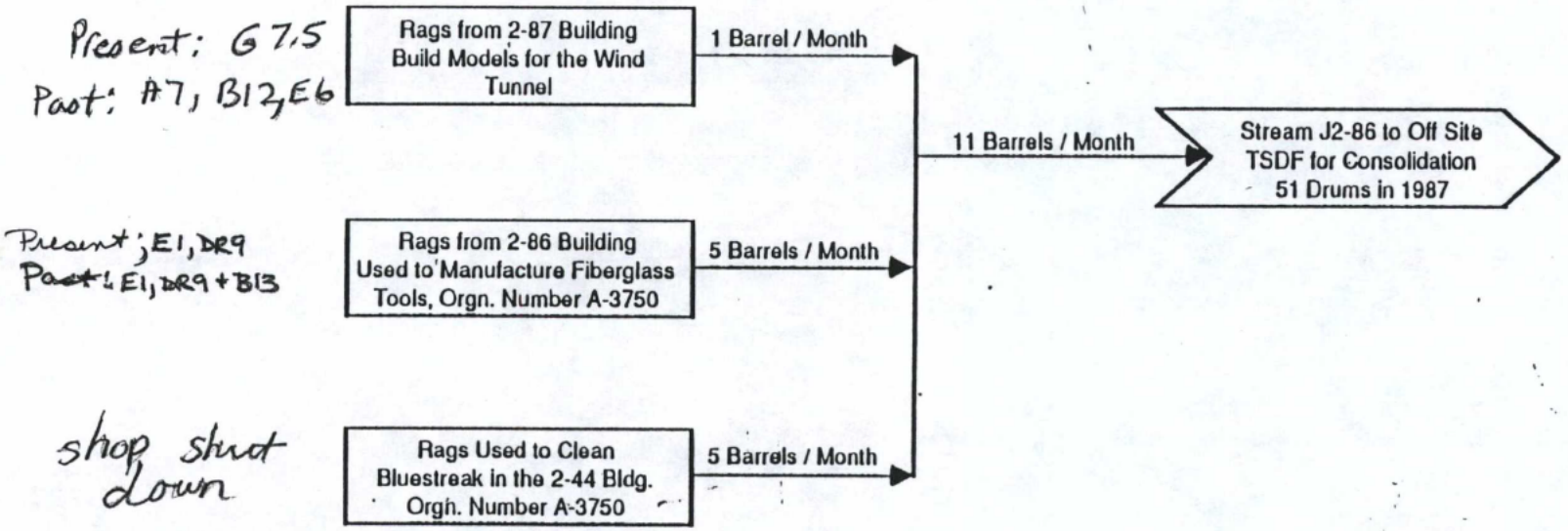
Ultimate disposition: The rags are reconsolidated into small fiber drums and shipped to Texas for incineration.

NOTES:

FIGURE J2-86

ACCUMULATION OF USED RAGS AT 2-86 BUILDING

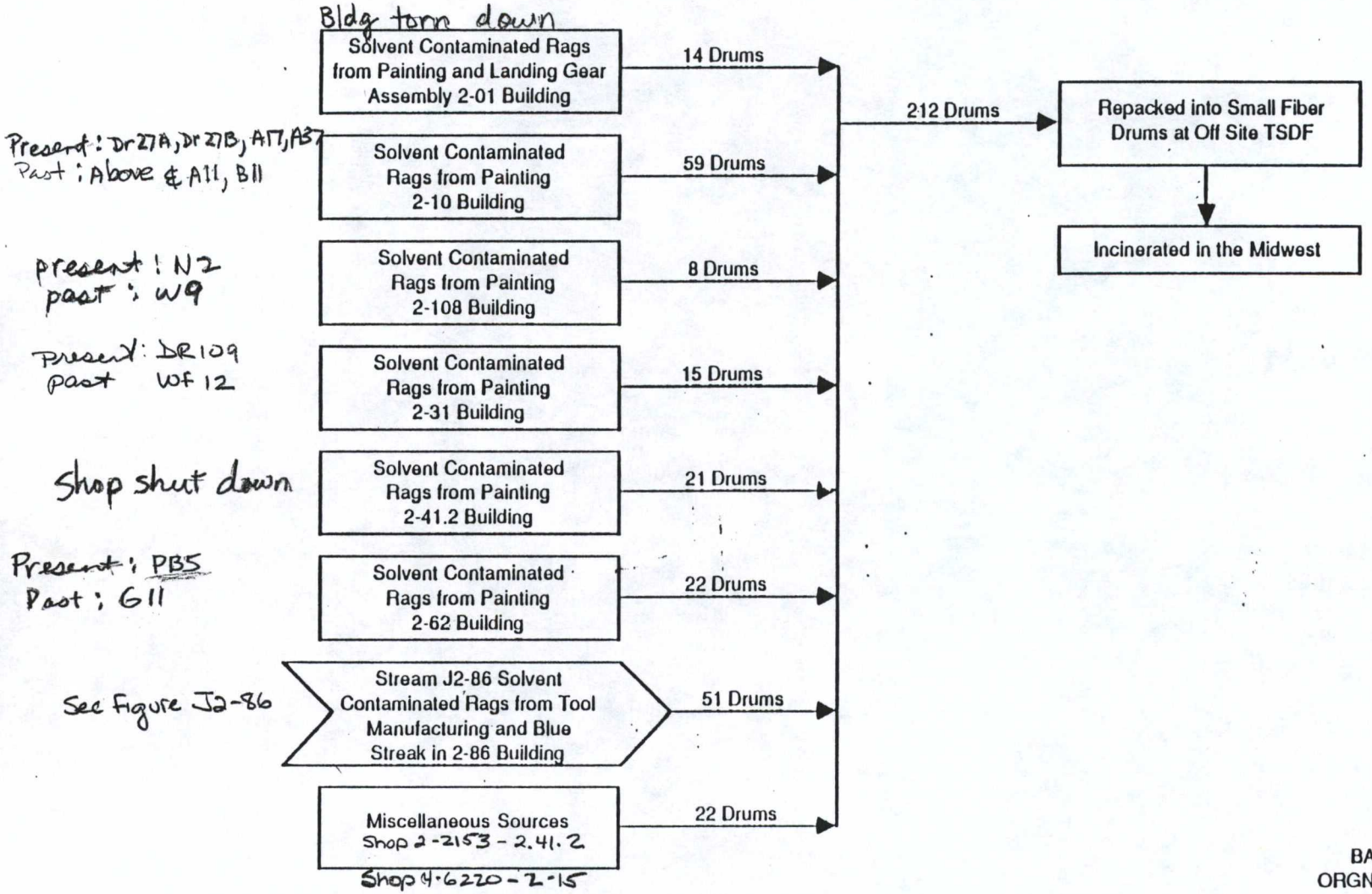
(MONTHLY QUANTITIES REFLECT 1988 VALUES)



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
J286MO

FIGURE J2
1987 SOLVENT CONTAMINATED RAG GENERATION AND DISPOSAL



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
J2MO

WASTE STREAM J2

SOLVENT CONTAMINATED RAGS WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Consolidated & compacted into small fiber drums at offsites TSDF & Inclnerated at another offsite TSDF

OPTIONS

1: Segregate solvent contaminated rags from rags that can be washed & reused.

2: Reduce the initial size of the rags.

3: Ration the dispensing of rags to reduce waste.

4: Wash → use as a raw material for paper manufacturing.

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM K2

WASTE PROFILE SHEET

Waste Name: Cyanide

Generators Source: 2-41 Plating Shop & 2-31 Roland Shop

Building	Quantity	Org. #	Contact	Phone #	M/S
2-41	18,700	A-3192	Jack McKee	655-2131	12-23
2-31	1,355	2-4344	Don Marschall	655-0516	19-14

Is it combined with other wastes?: Yes See Figure K2.

Waste Physical State: Liquid

Waste Chemical Makeup: 9 < pH < 13 Copper Cyanide, Sodium Cyanide

Significant Components: See Table K2

Reason for Use: See Table K2

Waste Generation Process Description: Baths (listed in Table K2) became "out of specification" and draws and dumps are made. Draws and small dumps are consolidated in two 300 gallon cyanide hold tanks located in the 2-31 Building. See Figure K2.

Reason for Disposal: See Table K2.

Specification Requirements: See Table K2.

Transporter: R.R. **Packaging Method:** Bulk

T.S.D.F. Destination: Georgetown

Billing Chem Code: G1 or G2

E.P.A. Hazardous Waste Codes: WT01, D002, D006, D007, D003, F007

Ultimate disposition: Consolidation → Electrolytic and/or Chemical Oxidation → Sewer to Metro. See Figure K2.

NOTES:

2-41 tank line no longer in use, area used for MR&D

TABLE K2

Tank/ Building	Capacity (Gallons)	Specification	Significant Compounds	Reason for Use	Reason for Disposal
A-33/2-41	480	BAC 5700	280 lbs. Sodium Cyanide 480 lbs. Sodium Hydroxide 324 lbs. Zinc Cyanide 7.2 pints Duozinc 101	Electroplate Zinc	> 8 oz/gal. Carbonates
A-39/2-41	975	BAC 5625	300 lbs. Sodium Cyanide 100 lbs. Sodium Hydroxide	Loosen Smut & Prevent Rust	Contamination
A-40/2-41	1,300	BAC 5701	1,130 lbs. Sodium Cyanide 325 lbs. Cadmium Oxide Sodium Hydroxide ROHC Super XL Brightner (40% Nickel Sulfate) Cadmium Balls	Electroplate Cadmium	> 8 oz/gal. Carbonates
A-42/2-41	1,300	BAC 5722	390 lbs. Sodium Cyanide 286 lbs. Copper Cyanide 52 lbs. Sodium Hydroxide 169 lbs. Sodium Carbonate 494 lbs. Rochelle Salts	Electroplating Copper	> 12 oz/gal Carbonates
A-50/2-41	50	BAC 5714	20 lbs. Sodium Cyanide 17 lbs. Copper Cyanide 13 lbs. Sodium Carbonate 18 lbs. Rochelle Salts	Copper Strike (Preceeds Electro-plating Copper on Aluminum)	> 8 oz/gal. Carbonates
A-70/2-41	940	BAC 5771	1400 lbs. Sodium Cyanide 600 lbs. En Strip S	Strip Copper	Performance Failure

plating area cols A-F, 17-21

plating area

Tank/ Building	Capacity (Gallons)	Specification	Significant Compounds	Reason for Use	Reason for Disposal
A-71/2-41	270	BAC 5701	235 lbs. Sodium Cyanide 68 lbs. Cadmium Oxide Caustic Soda 16 pints Super XL Brightner (40% Nickel Sulfate) Cadmium Balls	Electroplate Cadmium	> 8 oz/gal. Carbonates
A-78/2-41	240	BAC 5715	Sodium Cyanide 9.5 oz/gal. Silver Cyanide .6 oz/gal. Sodium Carbonate 0.4 - 0.6 oz/gal. Silver Metal	Silver Strike (Prerequisite for Silver Plating)	Contamination
A-79/2-41	240	BAC 5715	Potassium Carbonate 12-14 oz/gal Potassium Cyanide 3-10 oz/gal. Silver Cyanide 60 lbs. 2.9 - 4.0 oz/gal. silver	Electroplating Silver	> 14 oz/gal. Carbonates or Contamination
A-80/2-41	200	BAC 5701	50 lbs. Cadmium Oxide 175 lb. Sodium Cyanide Sodium Hydroxide Cadmium Balls 12 pints Super XL Brightner (40% Nickel Sulfate)	Electroplate Cadmium	
#16/2-31	88	BAC 5749	Endox 214 by Euthone Inc. (Sodium Cyanide < 40%) (Sodium Hydroxide < 50%)	Clean & Desmut	Accumulates Smut
#18/2-31	88	BAC 5701	Sodium Cyanide Cadmium Oxide Sodium Hydroxide Cadmium Balls Super XL Brightner by Rohco (40% Nickel Sulfate)	Plating Cadmium	> 8 oz/gal. Carbonates

WI 8

018

WASTE STREAM K2
CYANIDE WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

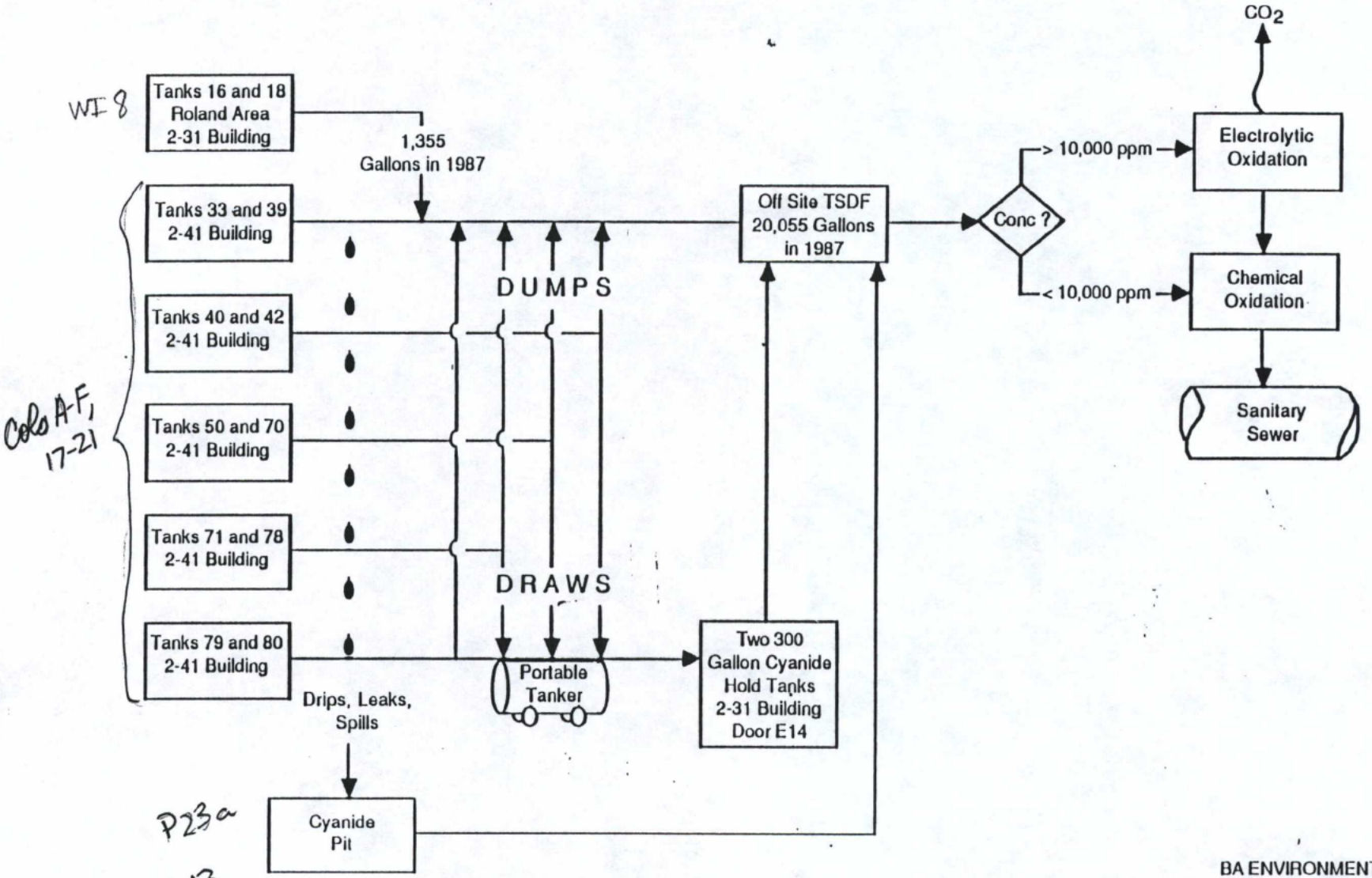
Consolidation, Chemical and/or Electrolytic Oxidation → Sanitary Sewer

OPTIONS

1: Prolong bath life by freezing out carbonates with an online continuous flow heat exchanger.

2: Better housekeeping by operators. Eliminate running hoses, overflows, drips, etc.

FIGURE K2
GENERATION AND DISPOSAL OF CYANIDE WASTES



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
K2MO

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM L2

WASTE PROFILE SHEET

Waste Name: Absorbent/Absorbent Pads

Annual Generation Rate: 1,534 ft^3

Generators Source: **Buildings:** See Table L2.

Organization Number: Table L2

Is it combined with other wastes?: Yes

Which Wastes?: Often contaminated debris.

Waste Physical State: Solid

Waste Chemical Makeup: Various: primarily oils; occasionally solvents, paint, acid, etc. A onetime PCB cleanup in the 2-84 Bldg. is responsible for 21% of this stream

Reason for Use: To soak up oil from leaky machines and random spills.

Waste Generation Process Description: Old machines, leak and splash oil, coolant and other fluids on the floor slowly, but rather continuously. Metal chips, that must be removed after every shift, get into granular absorbent causing the unsaturated absorbent and recyclable chips to be disposed of as hazardous waste after every shift. Also, used to line spill buckets under 55 gallon raw material dispensers, line floors that are constantly oily, and soak up infrequent spills.

Reason for Disposal: Saturated with fluid or mixed with metal chips.

Specification Requirements: Must absorb. When mixed with metal chips, must be removed after every shift.

Transporter: R.R. **Packaging Method:** Drum

T.S.D.F. Destination: Georgetown

Billing Chem Code: ESX011

E.P.A. Hazardous Waste Codes: NH, WT02, D007, D008, D001, F003

Probable Ultimate disposition: Absorbent, contaminated with F001-F005 listed wastes, is incinerated, other wastes are sent to a hazardous waste landfill.

NOTES:

TABLE L2

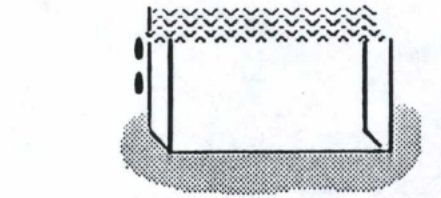
Building	Quantity Drums	Tubskids	% of Total	Org. #
Bld gone — 2-01	3	-	*	2-4344
present none 2-07	2	-	*	2-4344
Shop gone — 2-09	10	-	5%	2-4321
27 PAST / A-17 Shop A6831 PRESENT 2-10	15	3	12%	A-3190
K-9 Past/Present — 2-15	4	-	*	2-4344
Shops gone 2-25	1	-	*	N/D
WJ8 - Past / DOOR 109 - Present 2-31	10	-	5%	2-2306
Q-8, Q-10, Present/Past 2-40	6	-	*	Many
E-25 Q-22 C-15 Past 2-41	34	5	23%	2-2145
#4 Past 2-44	9	-	4%	A-3170
D4, D5 Past / PB5 Present 2-62	11	-	5%	2-2143
F-15, J-5, D-12 PAST DR-2 - Present 2-63	2	-	*	2-4343
DR-1 2-64	1	-	*	2-4344
BG DR-10S PAST D-10 Present 2-65	17	-	8%	2-4345
D-8 PAST/Present — 2-66	1	-	*	2-4344
DI-17 Past / DA-16 Present 2-80	4	-	*	2-4343
DR1 - Past / None Present 2-82	2	-	*	2-4344
AA-06 Past/Present 2-83	10	-	5%	A-2330
DR5 Past / 2-87 Col 67.5 Present 2-84	-	14	21%	2-4365
E1 / DR9 PAST PRESENT — 2-86	9	-	4%	A-3750
Shop gone — 2-89	1	-	*	4-5322
Shop gone 2-91	13	-	6%	2-4344
Total	165	22	100%	

Present
D22/A-3160
N17/9-3205
J17/9-3205
I23/A-3160
J-13/A-3180

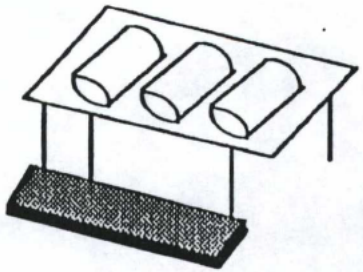
Present
S10/A2313
S25/9-3205
W6/A-2313
U9/A2313
W24/A3160

* Less than 3% of the total.

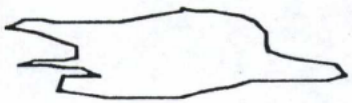
FIGURE L2
GENERATION AND DISPOSAL OF USED ABSORBENT



Chips Combine with Granular Absorbent and Liquid from Splashing and Leaking Machines (Primary Source of Generation)



Absorbent Pads Lining Spill Buckets and Areas in which Spills are Frequent



Absorbent used to Clean up Random Spills

See Table L2 For Accumulation Data

Barrelled

Sorted and Staged at Off Site TSDF

?

Contains F001 - F005 Solvents

Repackaged in Fiber Drums

Incinerated

Does not Contain F001 - F005 Solvents

Hazardous Waste Landfill

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
L2MO

WASTE STREAM L2
ABSORBENT WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Incineration or (U) Landfill

OPTIONS

1: Replace with mop water

→ Use ultrafiltration to treat mop water → Metro

or → Treat & recycle

2: Replace all grannual absorbent with 100% more efficient absorbent pads. Facilitates segregation of chips and absorbent

→ Incineration

or → (U) Landfill

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM M2

WASTE PROFILE SHEET

Waste Name: Paint Screens

Annual Generation Rate: 1,320 ft^3

Generators Source:

Building	Amount	% of Total	Organization Number
2-10 Past/Present DR 27	12 Tubskids 4 Drums	24%	2-4322/A-3190
2-40	28 Tubskids	50%	A-3190
2-41	5 Tubskids Past F 15	9%	A-3191 } Present shop shutdown
2-41.2	3 Tubskids Past P14	5%	A-3190 }
Unclaimed	7 Tubskids	13%	N/D *
Total	**55 Tubskids & 4 Drums**		

Contact name: Bertha Jacobson

Phone Number: 655-1301

Is it combined with other wastes?: Yes

Which Wastes?: Paint covered paper from the floors and carousel lift arms.

Waste Physical State: Solid

Waste Chemical Makeup: Metal screens coated with paint which contains chrome.

Reason for Use: To hold parts while they are being painted.

Waste Generation Process Description: Overspray accumulates on the screens during the painting process. Eventually the screens become completely clogged. The screens are removed and combined with paint covered paper from the floors and carousel arms and floor sweepings.

Reason for Disposal: Screens become clogged with paint and create paint application problems. They also become too heavy for the carousel lifts resulting in equipment failure.

* Org. No. A-3540 in the 2-08 Bldg. and A-6130 in the 2-65 Bldg. contribute to this waste stream.

Transporter: R.R. **Packaging Method:** 98% tubskids and 2% in drums

T.S.D.F. Destination: Georgetown

Billing Chem Code: ESXP52

E.P.A. Hazardous Waste Codes: WT02, D007, D008

Ultimate disposition: Consolidated, crushed and sent to a hazardous waste landfill.

FIGURE M2
GENERATION OF PAINT SCREEN WASTE

Screens Hold Parts
during Painting Process
and get hit with Overspray

Continued
Use

With continued use,
Screens accumulate
paint and holes begin to fill
causing application problems.
Increased weight can also
cause equipment failure.

See WASTE Profile Sheet
FOR ACCUMULATION LOCATION.
Screens are Replaced.
Old Screens are sent to Georgetown for
consolidation and crushing

Hazardous Waste
Landfill

BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
M2MO

WASTE STREAM M2

PAINT SCREEN WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Consolidate and crush at offsite TSDF
(U) Landfill

OPTIONS

1: Consolidate, crush ---------- Direct ----------> (U) Landfill

2: Use a screen with a less tightly woven mesh.

3: May be possible to remanage as a municipal waste with or without stabilization.

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM N2

WASTE PROFILE SHEET

Waste Name: Alkaline

Annual Generation Rate: 23,600 gallons

Generators Source: Building See Table N2

Organization Number: See Table N2 **Contact name:** Don Marschall

Phone Number: 655-0516 **M/S:** 19-14

Is it combined with other wastes?: Yes

Waste Physical State: Liquid

Waste Chemical Makeup: 10 < pH < 13.3, occasionally about 50 ppm Chrome, Sodium Hydroxide and Amonium Hydroxide, Sodium Metasilicate and Sodium Phosphate.

Significant Components: See Table N2.

Reason for Use: To clean parts prior to metal finishing.

Waste Generation Process Description: Small dumps and draws from tanks in the 2-10 Building Aluminum Chem Mill Area, 2-31 Roland Area, 2-41 Building and 2-62 Building containing Alkaline cleaners are consolidated tank A-2 in the 2-41 Building.

Reason for Disposal: Become so dirty that they fail to clean parts or if the sum of the adds equals the entire volume of the bath, the bath is dumped.

Transporter: R.R. **Packaging Method:** Bulk

T.S.D.F. Destination: Tacoma

Billing Chem Code: B

E.P.A. Hazardous Waste Codes: WT02, D002

Ultimate disposition: Reduction, Precipitation, Sedimentation; Solids to Hazardous Waste Landfill; Liquids to Sanitary Sewer.

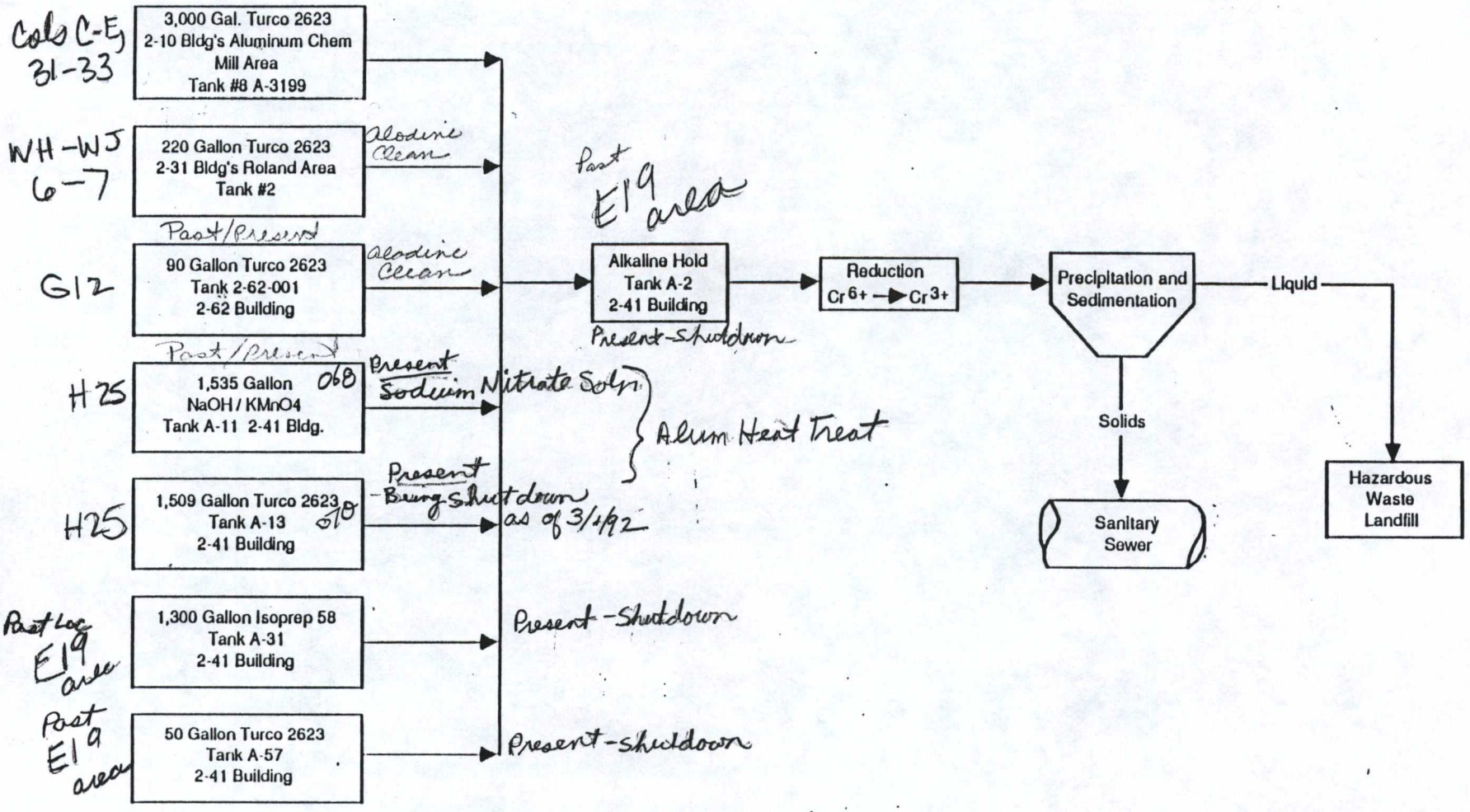
TABLE N2

Building	Org. No.	Tank No.	Volume (Gallon)	Specification	Significant Compounds
2-10	A-3199 (Aluminum Chem Mill Area)	8	3,000		*Turco 2623 (30% Sodium Metasilicate) (7% Sodium Phosphate, Tribasic)
2-31	Post 2-2306 (Roland Area) Present 9-3208	2	330		*160 lbs Turco 2623 by Purex (30% Sodium Meta Silicate) (7% Sodium Phosphate, Tribasic)
2-41	A-3192 (Aluminum Heat Treat)	A-11	1,535	BAC 5749	1,275 lbs. Sodium Hydroxide 600 lbs. Potassium Permanganate
2-41	A-3192 (Being Shutdown)	A-13	1,509	BAC 5749	*660 lbs. Turco 2623
2-41	A-3192 (Shutdown)	A-31	1,300	BAC 5749	1,000 lbs. Isoprep 58
2-41	A-3192 (Shutdown)	A-57	50	BAC 5749	*30 lbs. Turco 2623
2-62	Post 2-2143 Present 9-3203	2-62-001	90		*Turco 2623

* Dumped when the sum of the adds equals the initial make-up of the bath.

FIGURE N2
ALKALINE WASTE GENERATION AND DISPOSAL PROCESS

Aluminum Heat Treat



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711

11-17-88
N2MO

WASTE STREAM N2
ALKALINE WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

(TR): $Cr^{6+} \rightarrow Cr^{3+}$, Neutralization
(VR): Precipitation, Sedimentation; Liquid → Sanitary Sewer
(U) Settled Solids

CHANGES IMPLEMENTED

(S) Settled Solids

OPTIONS

Reuse

1: Centrifuge → Ultrafiltration → Sanitary Sewer

or

2: Reduction, Precipitation, Sedimentation; Liquids → Sanitary Sewer
Metals reclaimed from solids

(U) Settled Solids
(S) Settled Solids

3: Evaporate → Condense → Sewer to Metro water
Oil used as an alternate fuel

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

TABLE P2

Building	Amount (Drums)	Percent of Total	Organization Number
2-09 Present - none	2		2-4321
2-108 Present - none	4	5%	2-4100
2-31 Present - none	1		2-2306
2-40 Present - C11	8	10%	2-2145
PAST P15, L14, L13 2-41 – Present - L14, M14	44	54%	2-2145
2-412 - Present - none	1		2-2145
PAST VC 23½ 2-49 Present - VC - 23½	7	8%	A-3750
2-64 Present - none	1		2-4100
PAST G16, L20 2-65 Present - G16, D20	10	12%	A-6130
2-66 Present B10, N5, D8, J3 – shop 9-3203	3		2-2143
2-15 Present from Auto Shop small qty			
2-10 present & past F-45 Hammer shop			A-3140

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM Q2

WASTE PROFILE SHEET

Waste Name: Skydrol

Annual Generation Rate: 77 drums disposed of as hazardous Waste
57 drums reclaimed

Generators Source of Non-reclaimable Skydrol:

96 drums from Renton
17 drums from North Boeing Field
7 drums from Plant II
14 drums from miscellaneous sources

Organization Number: 4-5322 **Contact name:** Brad Lewis

Phone Number: 655-5797 **M/S:** 1W-46

Is it combined with other wastes?: No

Waste Physical State: Liquid

Raw Material Manufacturer: Monsanto

Product Name: Skydrol

Significant Components: Tributyl Phosphate
Dibutyl Phenyl Phosphate
2,6 Di-tert-butyl-p-cresol

Reason for Use: Hydraulic Oil for airplanes.

Waste Generation Process Description: See Figure Q2

Reason for Disposal: Reclaimer refuses to recycle it because:
1. there is low or no demand or
2. it is too contaminated (usually with water).

Transporter: Resource Recovery **Packaging Method:** Barrel

T.S.D.F. Destination: Georgetown

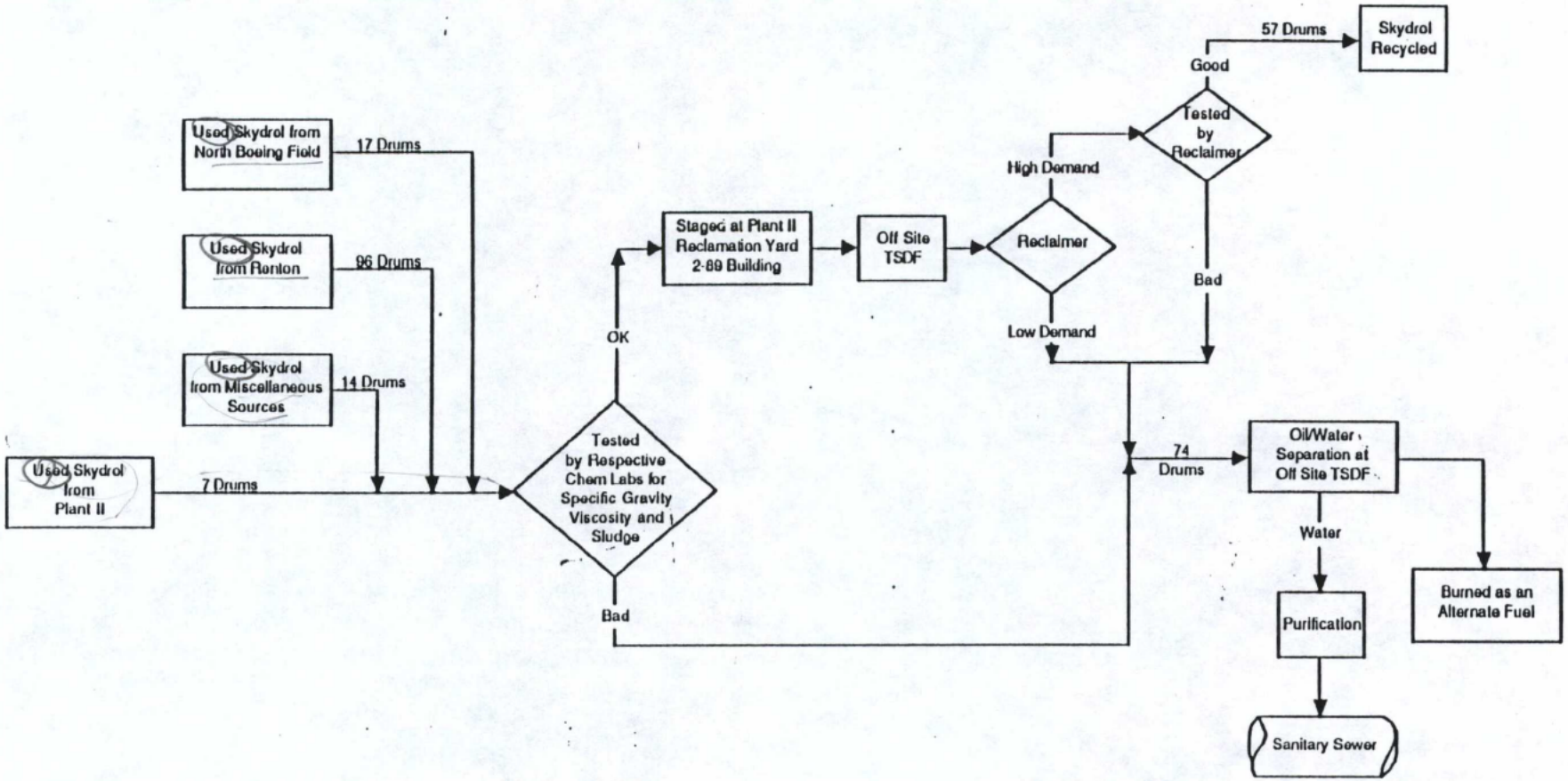
Billing Chem Code: ELX047

E.P.A. Hazardous Waste Code: WT02

Ultimate disposition of Unrecycled Skydrol: Oil used as an alternate fuel source; water purified and sewered. See Figure Q2

NOTES:

FIGURE Q2
ACCUMULATION OF SKYDROL WASTES



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
Q2MO

WASTE STREAM Q2
SKYDROL WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Skydrol reclaimed when purity is good and demand is high

Unreclaimed Skydrol → oil/water separation;
Oil used as an alternate fuel
Water → Purified → Sanitary Sewer

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM R2

WASTE PROFILE SHEET

Waste Name: Lab Packs

Annual Generation Rate: 89 drums

Generators Source:

Building	Quantity (Drums)
Misc.	20
2-01 – Present Bld gone	11
2-40 –	57
2-86 –	1

Organization Number: Miscellaneous

Is it combined with other wastes?: Yes

Which Wastes?: Miscellaneous compatible wastes.

Waste Physical State: Solid, Liquid, and Gas

Waste Chemical Makeup:

Type of Lab Pack	Number of Drums
Flammable	27
Combustible	10
Chrome/Corrosive	2
ORM E	12
Poison B	5
Corrosive Acid	10
Corrosive Alkaline	5
Oxidizer	2
ORM C	1
ORM A	7
ORM B	2
Mercury	3
Asbestos	3

Raw Material Manufacturer: Various

Product Name: Various

Significant Components: Various

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

Reason for Use: To collect, transport and dispose of small quantities of hazardous wastes.

Waste Generation Process Description: Quantities equaling 6.5 gallons or less are collected and consolidated with compatible wastes and absorbent in 55 gallon drums at the source of generation or in front of the 2-40 Building on the first Tuesday of every month.

Reason for Disposal: Various

Transporter: Resource Recovery **Packaging Method:** Lab pack (55 gallon drum)

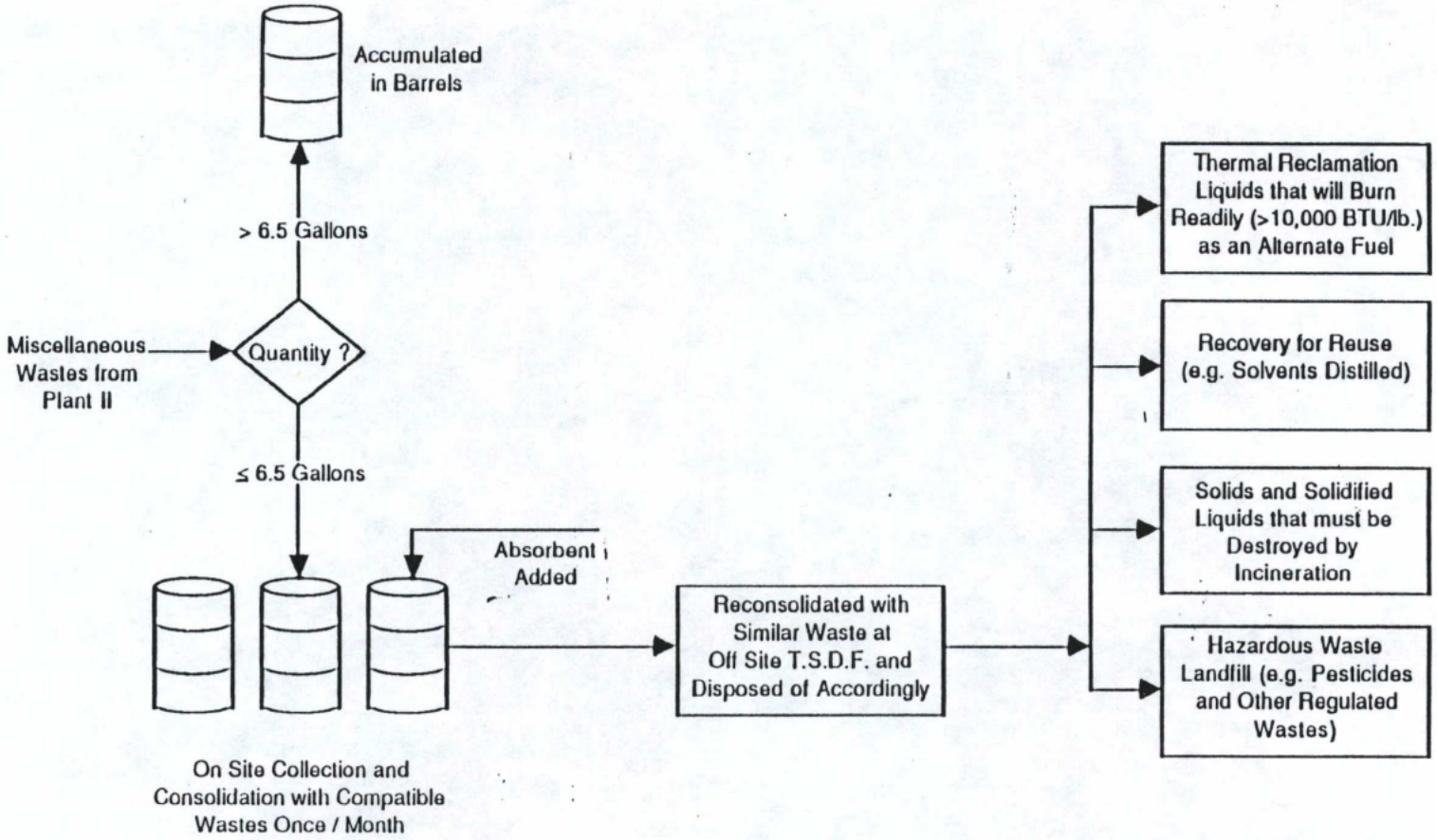
T.S.D.F. Destination: Georgetown

E.P.A. Hazardous Waste Code: WL02, WL02, D001, D002, D007, D009

Ultimate disposition: Reused as an alternate fuel, recovery for reuse, incineration or landfill.

FIGURE R2

GENERATION AND DISPOSAL OF LAB PACKS



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
R2MO

WASTE STREAM R2
LAB PACK WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Depending on Waste . . .

Alternate fuel
Recovery for Reuse

Incineration

(U) Landfill
(S) Landfill

OPTIONS

1: Puncture, drain & municipally landfill aerosol cans.

2: Make and distribute a list of wastes and respective locations of wastes that are consolidated in barrels or bulk.

3: Use refillable aerosol cans whenever possible.

4: Reuse good materials, that are no longer used by one shop, in another shop (small inhouse waste exchange).

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM S2

WASTE PROFILE SHEET

Waste Name: Oil Filters

Annual Generation Rate: 3630 gallons
(72 barrels)

Generators Source: **Buildings** See Table S2

Organization Number: 4-6220 **Contact name:** Arnie Handugan

Phone Number: 655-5425 **M/S:** 22-05

Is it combined with other wastes?: Yes

Which Wastes?: Small quantities of absorbent pads

Waste Physical State: Solid

Waste Chemical Makeup: Oil, oil filters, absorbent pads

Reason for Use: Automobile oil filters and machine oil filters ✓

Waste Generation Process Description: Basically, this waste originates from the automotive shop in the 2-15 Building or from machine mechanics changing machine oil filters. Before 6/88, both organizations simply gravity drained the oil filters and barreled them with about 25% of the oil still present. After 6/88, used filters from the automotive shop were crushed the remaining oil extracted and recycled, and the crushed filters barreled as hazardous waste. Crushing the oil filters reduces the volume of this waste stream by 60% - 70%. See Table S2 and Figure S2.

South end

Reason for Disposal: Filters are saturated with dirt and dirty oil.

Transporter: Resource Recovery **Packaging Method:** Drum

T.S.D.F. Destination: Georgetown

Billing Chem Code: ELX051

E.P.A. Hazardous Waste Code: WT02

Probable Ultimate disposition: Crushed & solidified @ offsite TSDF → hazardous waste landfill

E.P.A. Hazardous Waste Codes: D002, D011, D006, WT02

Ultimate disposition: Precipitation, Sedimentation; Solids to Hazardous Waste Landfill; Liquids → Sanitary Sewer

NOTES:

NOTES:

-

-

-

TABLE S2

Building	Organization	Number of Drums	Percent of Total
2-09 (Former Machine Mechanic's Shop)	2-4322	15	21%
2-10	2-4322	1	*
2-15 (Auto Shop)	4-6220	50	69%
2-40	2-4320	1	*
2-41	2-4320	1	*
2-44	A-3170	1	*
2-91 NOT OPERATING	2-4322	3	4%

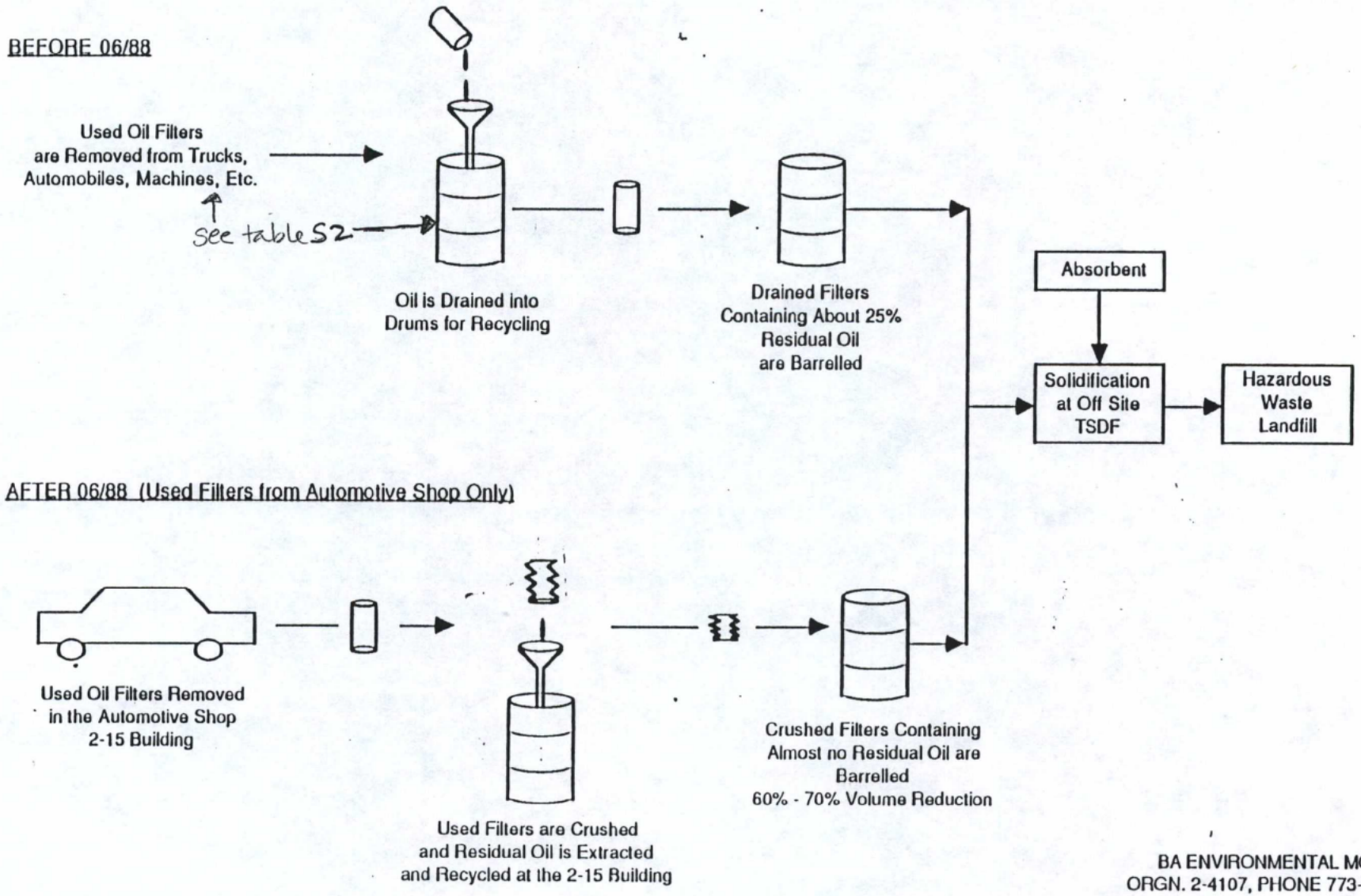
present: C11

H1-3 2-83

A-2330

* Less than 2% of the total.

FIGURE S2
GENERATION AND DISPOSAL OF OIL FILTERS



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
S2MO

WASTE STREAM S2
OIL FILTERS WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Crushed, solidified

Oil Recycled <----

→ (U) Filters

CHANGES IMPLEMENTED

Filters crushed in 2-15 Building (Suggestion submitted summer '88)

OPTIONS

1: Adopt changes implemented in 2-15 Building at all Kent and Plant II generators or bring oil filters to 2-15 Building for crushing.

October 3, 1988
WPK #2-88
Reference Document - For Boeing Use Only

WASTE STREAM T2

WASTE PROFILE SHEET

Waste Name: Fixer

Annual Generation Rate: 1971 gallons (45 Barrels) 16,440 pounds

Generators Source:

Building	Drum	Tubskid
2-82	1	
2-83	1	
2-86		1
2-89	45	

Organization Number: 4-5322 **Contact name:** Brad Lewis

Phone Number: 655-5797 **M/S:** 1W-46

Is it combined with other wastes?: No

Waste Physical State: Liquid

Raw Material Manufacturer: Eastman Kodak

Product Name: Fixer

Significant Components: N/D

Reason for Use: Develop film

Waste Generation Process Description: Fixer from various sites is consolidated at the Plant II Reclamation Yard where the silver is reclaimed.

Reason for Disposal: Residual amounts of silver prohibit this waste from being sewered after silver reclamation.

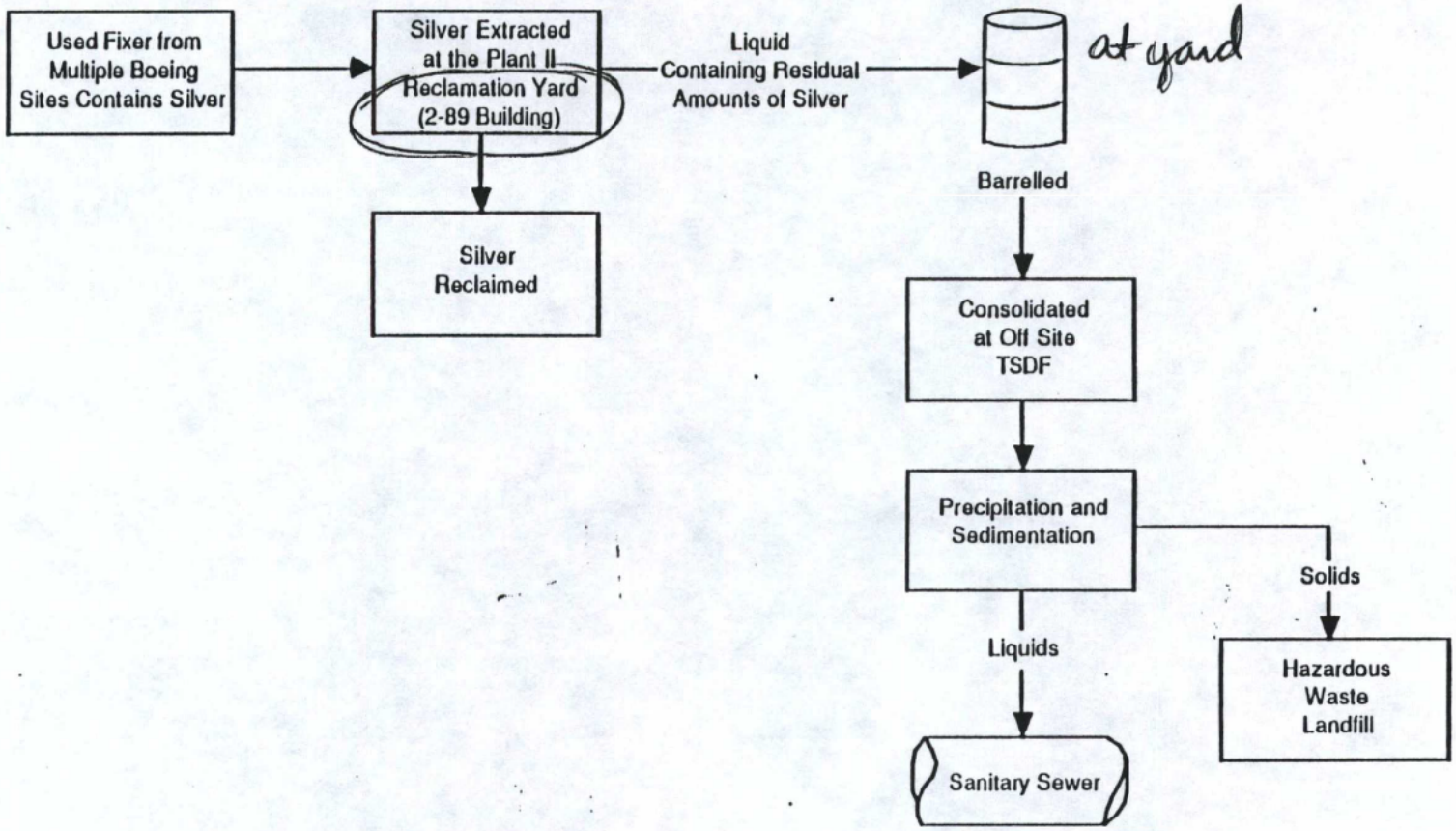
Specification Requirements: The Metro discharge limit is 0.43 ppm silver.

Transporter: Resource Recovery **Packaging Method:** Barrel

T.S.D.F. Destination: Georgetown

Billing Chem Code: ELXW75

FIGURE T2
GENERATION AND DISPOSAL OF FIXER



BA ENVIRONMENTAL MGMT.
ORGN. 2-4107, PHONE 773-5711
11-17-88
T2MO

WASTE STREAM T2
FIXER WASTE MANAGEMENT OPTIONS

MOST DESIRABLE — LEAST DESIRABLE

INHOUSE			OUTSIDE		
SOURCE REDUCTION	RECYCLE	VOLUME REDUCTION DETOXIFICATION	RECYCLE	VOLUME REDUCTION (VR) TOXICITY REDUCTION (TR)	LANDFILL STABILIZED (S) UNSTABILIZED (U)

1987 PRACTICE

Precipitation, Sedimentation; Liquid → Sanitary Sewer
(U) Settled Solids

CHANGES IMPLEMENTED

(S) Settled Solids

OPTIONS

Reclaim residual silver, water → Sanitary Sewer